

日本水産動植物圖集

上 編

ILLUSTRATIONS OF JAPANESE
AQUATIC PLANTS AND ANIMALS
VOLUME ONE

大日本水産會編纂

2006
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AQUATIC PLANTS AND ANIMALS

VOLUME ONE

TOKYO

FISHERIES SOCIETY OF JAPAN

(DAI-NIHON SUISAN-KWAI)

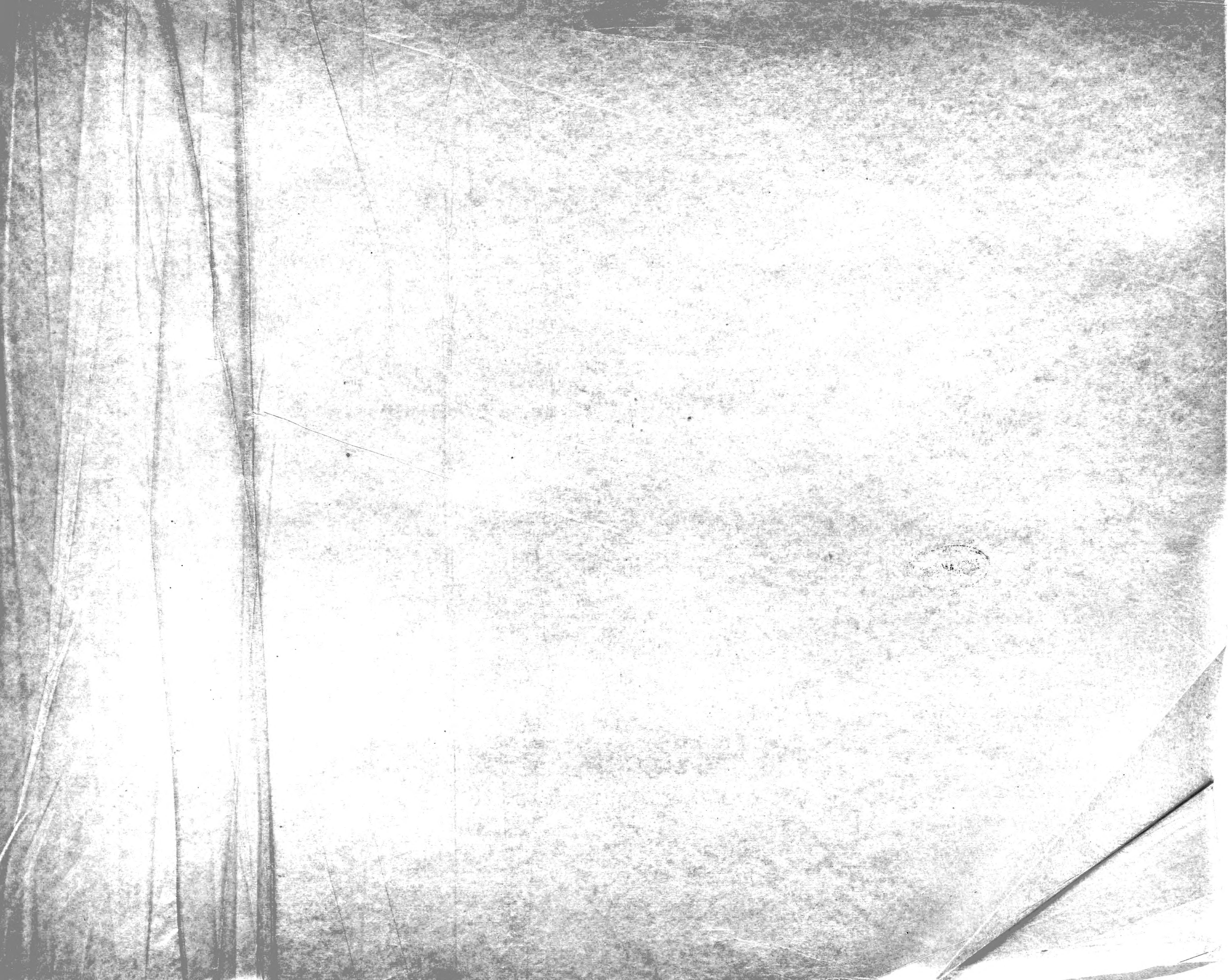
1935

大日本水產會

發賣所

株式會社 北隆館





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MADE IN JAPAN

序 文

大日本水産會ハ明治十五年ノ創立ニ係リ今昭和六年ヲ以テ創立第五十週年ヲ迎フルコト
トナレリ依テ此意義アル歴史ヲ記念スル爲メ水産動植物圖集ヲ刊行シ之レヲ頒布スルコト
トセリ

本會ハ去明治二十五年日本重要魚介ヲ類集セル魚介圖ヲ刊行シ同三十三年及四十三年増
補重版ヲ爲セシガ其集録セル種類ハ尙三百餘種ニ過ギザリシナリ當時此文獻ガ學界ノ研究
資料トシ又美術工藝ノ參考資料トシテ社會ニ好影響アリシ事實ニ稽ヘ今回刊行セルモノハ
全然原圖ヲ新ニシ六百餘種ニ増加シテ我水産ノ重要動植物ハ殆ンド之レヲ網羅シ且ツ和英
兩文ノ解説ヲ付シ其完成ニ最善ノ注意ヲ拂ヒタリ

本圖集ハ魚介寫生ノ大家伊藤熊太郎氏ノ描寫ニ係リ生物學ノ權威數氏ノ監修ヲ經タル科
學的正確ナル原色版ニシテ本邦空前ノ著述ナリト信ズ今ヤ水産業興隆ノ氣運ニ會シ本圖集
ノ刊行ガ斯界ノ文化ニ貢獻スル所アラバ此記念事業ノ意義ノ徒爾ナラザルコトヲ欣幸トス
ルモノナリ

昭和六年五月

大日本水産會長

伊 谷 以 知 二 郎

編 纂 者 (イロハ順)

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PREFACE

The Fisheries Society of Japan was founded in the year 1882, and to commemorate this year the completion of the fiftieth year since its formation the Society proposed to compile and publish a book entitled, "Illustrations of Japanese Aquatic Plants and Animals." It is further proposed that this publication be widely distributed not only in Japan but also in foreign countries.

It was in 1892 that this Society first compiled and published a collection of illustrations of some three hundred fishes and shell-fishes of Japan. This was subsequently twice revised and enlarged, in 1900 and in 1910. This scholarly work well achieved was very favorably received by scholars, scientists, students and other interested parties at the time. In academic circles it served as one of the most valuable materials for study and in fine art and industrial arts, it was an indispensable reference book.

Prompted by the interest thus shown a more thorough and complete treatment of the subject has been carried out in the compilation and publication of this new book. In the present work new original drawings covering practically all of the principal aquatic plants and animals to the number of more than 700 have been prepared. It also has an added feature in having the explanations in the English language as well as in the Japanese.

All the drawings in these volumes were made by Mr. Kumatarô Itô, an authority on the art. The compilation was conducted under the able supervision of a Committee consisting of several noted authoritative biologists and specialists of Japan. In this connection, therefore, the publishers desire to state that no work of such merit with scientific authenticity and accuracy has ever before been published in Japan.

Of late years the fishery industry has gained its recognition as one of the most important industries of the world. At this particular juncture it is hoped that this humble work may offer some contribution to the furtherance of this industry. If this hope be realised our pleasure will be beyond words for we will feel that our efforts in undertaking this commemorative volume will not have been in vain.

Ichijirô Itani.

THE FISHERIES SOCIETY OF JAPAN

(DAI NIPPON SUISAN KWAI)

Tokyo.

May, 1931.

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Drawings by Kumatarô Itô.

目次

CONTENTS

第一圖版

一	オ	ツ	ト	セ	イ		
二	ノ	イ	リ	ア	サ	ラ	シ
三	フ	シ	カ				
四	フ	ツ	コ				

第二圖版

一	ウ	ク	ヂ	ラ				
二	シ	ロ	ナ	ガ	ス	ク	ヂ	ラ
三	ナ	ガ	ス	ク	ヂ	ラ		
四	イ	ワ	シ	ク	ヂ	リ		
五	セ	ミ	ク	イ	ラ			
六	コ	ク	ヂ	キ				

第三圖版

一	マ	ツ	コ	ウ	ン	ヂ	ラ
二	ツ	チ	ク	ヂ	ラ		
三	ン	ド	ウ	ク	ヂ	ラ	
四	ス	ト	メ	リ			
五	マ	イ	ル	カ			
六	カ	マ	イ	ル	カ		
七	シ	ヤ	チ				

第四圖版

一	ア	ナ	ウ	ミ	ガ	メ
二	ア	カ	ウ	ミ	ガ	メ
三	タ	イ	バ	イ		
四	シ	サ	ガ	メ		
五	ス	ツ	ボ	ン		
六	イ	シ	ガ	メ		

第五圖版

一	メ	ク	ラ	ウ	ミ	ギ	
二	カ	ワ	ヤ	ツ	メ		
三	シ	ノ	カ				
四	エ	ド	ア	ブ	ラ	ザ	メ
五	シ	コ	ザ	メ			
六	シ	マ	ネ	コ	ゾ	メ	

PL. I

Fig.	1.	Callotaria ursina (Linné)
	2.	Phoca largha Pallas
	3.	Zalophus lobatus Gray
	4.	Enhydra lutris (Linné)

PL. II

1.	Megaptera nodosa (Bonnaterre)
2.	Balaenoptera musculus (Linné)
3.	Balaenoptera physalus (Linné)
4.	Balaenoptera borealis Lesson
5.	Balaena glacialis Bonnaterre
6.	Rhachianectes glaucus (Cope)

PL. III

1.	Physeter macrocephalus Linné
2.	Berardius bairdii Stejneger
3.	Globiocephala scammoni Cope
4.	Neophocaena phocaenoides (Cuvier)
5.	Delphinus dussumieri Blanford
6.	Lagenorhynchus obliquidens Gill
7.	Orcinus orca (Linné)

PL. IV

1.	Chelonia japonica (Thunberg)
2.	Caretta olivacea (Eschscholtz)
3.	Eretmochelys squamosa (Girard)
4.	Dermochelys schlegeli (Garman)
5.	Amyda japonica (Temminck & Schlegel)
6.	Clemmys japonica (Temminck & Schlegel)

PL. V

1.	Eptatretus burgeri (Girard)
2.	Entosphenus japonicus (Martens)
3.	Chlamydeselachus anguineus (Garman)
4.	Heptanchias deani (Jordan & Starks)
5.	Heterodontus japonicus (Dunéril)
6.	Heterodontus zebra (Gray)

第六圖版

一	ホ	シ	ツ	メ				
二	ト	チ	ザ	メ				
三	ヒ	ラ	ガ	シ	ラ			
四	ト	ガ	リ	ヒ	ラ	ガ	シ	ラ
五	ヨ	シ	キ	リ	ザ	メ		
六	メ	ジ	ロ	ザ	メ			

第七圖版

一	オ	ナ	ガ	ザ	メ	
二	シ	ユ	モ	ク	ザ	メ
三	ウ	バ	ザ	メ		
四	ツ	ノ	ザ	メ		
五	ヒ	ゲ	ツ	ノ	ザ	メ
六	ア	オ	ザ	メ		
七	ネ	ヅ	ミ	ザ	メ	

第八圖版

一	ノ	コ	ギ	リ	ザ	メ
二	カ	ス	ザ	メ		
三	コ	ロ	ザ	メ		
四	サ	カ	タ	ザ	メ	
五	ト	ン	ガ	リ		

第九圖版

一	ガ	ン	ギ	エ	ヒ	
二	イ	ト	マ	キ	エ	ヒ
三	ツ	バ	ク	ロ	エ	ヒ
四	シ	ビ	レ	エ	ヒ	
五	ワ	カ	エ	ヒ		
六	ト	ビ	エ	ヒ		

第十圖版

一	チ	ヨ	ウ	ザ	メ
二	ギ	ン	ザ	メ	
三	キ	ビ	ナ	ゴ	
四	ギ				
五	コ	ノ	シ	ロ	
六	ヒ				
七	エ				

第十一圖版

一	サ	ツ	バ			
二	マ	イ	ソ	シ		
三	ミ	ズ	ン			
四	ヤ	マ	ト	ミ	ズ	ン
五	ウル	メ	イ	ソ	シ	
六	ニ	シ	ン			
七	カ	タ	ク	テ		

PL. VI

Fig.	1.	Cynias manazo (Bleeker)
	2.	Triakis scyllium Müller & Henle
	3.	Scoriodon walbechmi (Bleeker)
	4.	Scoriodon acutus (Rüppell)
	5.	Prionace glauca (Linné)
	6.	Carcharias japonicus (Schlegel)

PL. VII

1.	Alopias vulpes (Gmelin)
2.	Sphyrna zygaena (Linné)
3.	Cetorhinus maximus (Günther)
4.	Squalus mitsukurini Jordan & Snyder
5.	Cirrhigaleus barbifer Tanaka
6.	Isuropsis glauca (Müller & Henle)
7.	Lamna nasus (Bonnaterre)

PL. VIII

1.	Pristiophorus japonicus Günther
2.	Squatina japonica Bleeker
3.	Squatina nebulosa Regan
4.	Rhinobatus schlegeli Müller & Henle
5.	Rhynchobatus djiddensis Forskål

PL. IX

1.	Raja kenoei Müller & Henle
2.	Mobula japonica (Müller & Henle)
3.	Pteroplatea japonica Temminck & Schlegel
4.	Narke japonica (Temminck & Schlegel)
5.	Dasybatus akajei (Müller & Henle)
6.	Myliobatis tobijei Bleeker

PL. X

1.	Acipenser mikadoi Hilgendorf
2.	Chimaera phantasma Jordan & Snyder
3.	Stolephorus japonicus (Houttuyn)
4.	Pterothrissus gissu Hilgendorf
5.	Konosirus punctatus (Temminck & Schlegel)
6.	Ilisha elongata (Bennett)
7.	Coilia nasus Temminck & Schlegel

PL. XI

1.	Sardinella zunasi (Bleeker)
2.	Sardinia melanosticta (Temminck & Schlegel)
3.	Sardinella mizun (Kishinouye)
4.	Sardinia okinawaensis (Kishinouye)
5.	Etrumeus micropus (Temminck & Schlegel)
6.	Clupea pallasii Cuvier & Valenciennes
7.	Engraulis japonicus Temminck & Schlegel

第十二圖版

一	サ	ケ	(雄)			
二	ナ	ケ	(雌)			
三	カ	ラ	フ	ト	マ	ス
四	マ					ス
五	ベ	ニ	マ			ス
六	マ	ス	ノ	ス		ケ

第十三圖版

一	ア	メ	ノ	ウ	ヲ
二	イ	ト		ウ	
三	ア		ユ	(雄)	
四	ア		ユ	(雌)	
五	ワ	カ	サ	キ	
六	キ	ウ	リ	ウ	ヲ
七	シ	ラ	ウ	ヲ	

第十四圖版

一	ヤ		マ	メ
二	ヤ		マ	メ
三	ヒ	メ	マ	ス
四	ニ	ジ	マ	ス
五	イ		ソ	ナ
六	カ	ハ	マ	ス

第十五圖版

一	ゴ	ン	ズ	イ		
二	ナ	マ	ズ			
三	ギ			キ		
四	ア	ユ	モ	ド	キ	
五	ド	ヂ	ヨ	ウ		
六	シ	マ	ド	ヂ	ヨ	ウ
七	マ		エ	ソ		

第十六圖版

一	コ					ヒ
二	ヒ		ゴ			ヒ
三	コ	ウ	ハ	ク	ゴ	ヒ
四	シ		ウ		ス	イ
五	フ					ナ
六	ゲン	ゴ	ロ	ウ	ブ	ナ

第十七圖版

一	ワ	キ	ン					
二	リ	ウ	キ	ン				
三	ラ	ン	チ	ウ				
四	オ	ラ	ン	ダ	シ	ガ	シ	ラ
五	デ	メ	キ	ン				
六	シ	ユ	ウ	キ	ン			
七	シ	ユ	ブ	ン	キ	ン		

PL. XII

Fig.	1.	Oncorhynchus keta (Walbaum), male
	2.	Oncorhynchus keta (Walbaum), female
	3.	Oncorhynchus gorboscha (Walbaum)
	4.	Oncorhynchus masou (Brevoort)
	5.	Oncorhynchus nerka (Walbaum)
	6.	Oncorhynchus tshawytscha (Walbaum)

PL. XIII

1.	Oncorhynchus masou (Brevoort)
2.	Hucho perryi (Brevoort)
3.	Plecoglossus altivelis Temminck & Schlegel, male
4.	Plecoglossus altivelis Temminck & Schlegel, female
5.	Hypomesus olidus (Pallas)
6.	Osmerus dentex Steindachner
7.	Salangichthys microdon Bleeker

PL. XIV

1.	Oncorhynchus macrostomus (Günther)
2.	Oncorhynchus macrostomus (Günther)
3.	Oncorhynchus adonis Jordan & McGregor
4.	Salmo irideus (Gibbons)
5.	Salvelinus pulvius Hilgendorf
6.	Salvelinus fontinalis (Mitchill)

PL. XV

1.	Plotosus anguillaris Lacépède
2.	Parasilurus asotus (Linné)
3.	Pseudobagrus aurantiacus (Temminck & Schlegel)
4.	Hymenophysa curta (Temminck & Schlegel)
5.	Misgurnus anguillicaudatus (Cantor)
6.	Cobitis biwai Jordan & Snyder
7.	Saurida argyrophanes (Richardson)

PL. XVI

1.	Cyprinus carpio Linné
2.	Ditto, var. "Higo"
3.	Ditto, var. "Kôhaku-go"
4.	Ditto, var. "Syûsui"
5.	Carassius auratus Linné
6.	Ditto, var. "Gengorôbuna"

PL. XVII

1.	Carassius auratus (Linné)
2.	Ditto, var. "Ryûkin"
3.	Ditto, var. "Ran'yû"
4.	Ditto, var. "Orandasisigasira"
5.	Ditto, var. "Demekin"
6.	Ditto, var. "Syûkin"
7.	Ditto, var. "Syubunkin"

第十八圖版

一	ア	ブ	ラ	ハ	ヤ
二	ヒ		ガ		ヒ
三	カ	マ	ツ	カ	
四	ア	ブ	ラ	ボ	テ
五	ハ		エ	(雌)	
六	オ	イ	カ	ハ	(雄)
七	ハ				ス

PL. XVIII

Fig.	1.	<i>Leuciscus atrilatus</i> (Jordan & Thompson)
	2.	<i>Sarcocheilichthys variegatus</i> (Temminck & Schlegel)
	3.	<i>Pseudogobio esocinus</i> (Temminck & Schlegel)
	4.	<i>Acheilognathus limbatus</i> (Temminck & Schlegel)
	5.	<i>Zacco platypus</i> (Temminck & Schlegel), female
	6.	Ditto, male
	7.	<i>Opsariichthys uncirostris</i> (Temminck & Schlegel)

第十九圖版

一	ヨ	ウ	デ	ウ	ラ
二	タ	ツ	ノ	オ	ト
三	タ	カ	ク	ラ	ウ
四	ウ		グ		ヒ
五	ウ		グ		ヒ
六	ニ		ゴ		ヒ
七	モ		ロ		コ
八	タ		ナ		ゴ
九	カ	ハ	ム	ツ	

PL. XIX

1.	<i>Syngnathus schlegeli</i> (Kaup)
2.	<i>Hypocampus coronatus</i> Temminck & Schlegel
3.	<i>Hypocampus takakurae</i> Jordan & Starks
4.	<i>Leuciscus hakuensis</i> Günther
5.	Ditto.
6.	<i>Hemibarbus barbatus</i> (Temminck & Schlegel)
7.	<i>Gnathopogon mayedae</i> (Jordan & Snyder)
8.	<i>Acheilognathus moriokae</i> Jordan & Thompson
9.	<i>Zacco temminckii</i> (Temminck & Schlegel)

第二十圖版

一	ウ		ツ		ボ
二	モン	ガ	ラ	ド	ウ
三	ウ		ナ		ギ
四	ク	ロ	フ	ナ	ゴ
五	ハ				モ
六	ギ	ン	ア	ナ	ゴ
七	マ	ア	ナ	ゴ	
八	グ	イ	ナン	ウ	ミ

PL. XX

1.	<i>Gymnothorax kikado</i> (Schlegel)
2.	<i>Microdonophis erabo</i> Jordan & Snyder
3.	<i>Anguilla japonica</i> Temminck & Schlegel
4.	<i>Leptocephalus kiusuanus</i> Jordan & Snyder
5.	<i>Muraenesox cinereus</i> (Forskål)
6.	<i>Anago anago</i> (Temminck & Schlegel)
7.	<i>Astroconger myriaster</i> (Brevoort)
8.	<i>Ophichthus asakurae</i> Jordan & Snyder

第二十一圖版

一	ア	ヤ	ト	ビ	ウ	ラ
二	サ		ン		マ	
三	ア	オ	カ	マ	ス	
四	ラ		ヨ		リ	
五	ア	オ	ヤ	ガ	ラ	
六	ア	カ	ヤ	ガ	ラ	
七	ト	ゲ	ウ	ラ		
八	ダ				ツ	
九	ア	カ	カ	マ	ス	
十	ト	ビ	ウ	ラ		

PL. XXI

1.	<i>Cypsilurus poecilopterus</i> (Cuvier & Valenciennes)
2.	<i>Cololabis saira</i> (Brevoort)
3.	<i>Sphyraena nigripinnis</i> (Temminck & Schlegel)
4.	<i>Hyporhamphus sajori</i> (Temminck & Schlegel)
5.	<i>Fistularia serrata</i> Cuvier
6.	<i>Fistularia petimba</i> Lacépède
7.	<i>Gasterosteus cataphractus</i> (Pallas)
8.	<i>Tylosurus anastomella</i> (Cuvier & Valenciennes)
9.	<i>Sphyraena pinguis</i> (Günther)
10.	<i>Cypsilurus agoo</i> (Temminck & Schlegel)

第二十二圖版

一	ボ			ラ	
二	メ		ナ	ダ	
三	ト	ウ	ゴ	イ	ウ
四	マ	ツ	カ	サ	ウ
五	ヒ		メ		ジ
六	タ	カ	サ	ゴ	ヒ
七	ト	ク	ヒ	メ	ジ

PL. XXII

1.	<i>Mugil cephalus</i> Linné
2.	<i>Liza menada</i> Tanaka
3.	<i>Atherina bleekeri</i> Günther
4.	<i>Monocentris japonicus</i> (Houttuyn)
5.	<i>Pseudopeneus bensasi</i> (Temminck & Schlegel)
6.	<i>Upeneus pleuropilos</i> Bleeker
7.	<i>Upeneus tragula</i> Richardson

第二十三圖版

一	キ	ン	メ	ダ	ヒ
二	ヒ	ウ	チ	ダ	ヒ
三	イ	ウ	ト	ロ	ダ
四	チ	ク	メ	ト	ト
五	ギ		ン		メ
六	ヨ	ロ	ヒ	ダ	ヒ

PL. XXIII

Fig.	1.	<i>Beryx splendens</i> Loue
	2.	<i>Hoplostethus mediterraneus</i> Cuvier & Valenciennes
	3.	<i>Holocentrus spinosissimus</i> Temminck & Schlegel
	4.	<i>Priacanthus japonicus</i> Cuvier & Valenciennes
	5.	<i>Polymixia japonica</i> Günther
	6.	<i>Ostiechthys japonicus</i> (Cuvier & Valenciennes)

第二十四圖版

一	ゴ	バ	リ	バ	
二	ホ	ン	サ	バ	
三	カ		ツ	ラ	
四	マ	ル	ツ	ウ	ダ
五	ヤ		イ		ト

PL. XXIV

1.	<i>Seomber japonicus</i> Houttuyn “Gomasaba”
2.	Ditto, var. “Honsaba”
3.	<i>Katsuwonus vagans</i> (Lesson)
4.	<i>Auxis thazard</i> (Lacépède)
5.	<i>Euthynnus yaito</i> Kishinouye

第二十五圖版

一	マ		グ		ロ
二	マ		ダ		ロ
三	キ		ハ		ダ
四	ビ	ン	ナ	ガ	
五	ス	ジ	ガ	ツ	ラ

PL. XXV

1.	<i>Thunnus orientalis</i> (Temminck & Schlegel)
2.	<i>Parathunnus sibi</i> (Temminck & Schlegel)
3.	<i>Neothunnus macropterus</i> (Temminck & Schlegel)
4.	<i>Germo germo</i> (Lacépède)
5.	<i>Sarda orientalis</i> (Temminck & Schlegel)

第二十六圖版

一	マ	カ	ジ	キ	
二	メ	カ	ジ	キ	
三	ク	ロ	カ	リ	
四	バ	セ	ウ	カ	ジ
五	サ		ハ		ラ

PL. XXVI

1.	<i>Tetrapterus mitsukurii</i> Jordan & Snyder
2.	<i>Xiphias gladius</i> Linné
3.	<i>Tetrapterus mazara</i> Jordan & Snyder
4.	<i>Istiophorus orientalis</i> (Temminck & Schlegel)
5.	<i>Seomberomorus nipponium</i> (Cuvier & Valenciennes)

第二十七圖版

一	マ	ン	ダ	ヒ	
二	ヒ	ラ	ザ	ハ	ラ
三	ヨ	ヨ	ジ	マ	ザ
四	カ	マ	ス	ザ	ハ
五	ア	ゴ	キ	シ	
六	タ	チ	ノ	ツ	ラ

PL. XXVII

1.	<i>Lampris regia</i> (Bonnaterra)
2.	<i>Cybiium koreanum</i> Kishinouye
3.	<i>Cybiium commerson</i> (Lacépède)
4.	<i>Acanthocybium solandri</i> (Cuvier & Valenciennes)
5.	<i>Polydactylus agonashi</i> Jordan & McGregor
6.	<i>Trichiurus japonicus</i> (Temminck & Schlegel)

第二十八圖版

一	イ	ト	ヒ	キ	ア	ジ
二	オ	キ		ア	ジ	
三	マ	ル		ア	ジ	
四	メ			ア	ジ	
五	ブ				ジ	
六	リ	ン	バ	チ		

PL. XXVIII

1.	<i>Alectis ciliaris</i> (Bloch)
2.	<i>Caranx helvolus</i> (Forster)
3.	<i>Decapterus maruadsi</i> (Temminck & Schlegel)
4.	<i>Selar mauritanicus</i> (Quoy & Gaimard)
5.	<i>Seriola quinqueradiata</i> Temminck & Schlegel
6.	<i>Seriola purpurascens</i> (Temminck & Schlegel)

第二十九圖版

一	オ	ニ	ア	ジ	
二	カ	イ	リ	リ	
三	ギ	ン	カ	メ	ラ
四	シ	マ	ア	ジ	
五	マ		ア	ジ	
六	オ	ア	カ	ア	ジ
七	ム	ロ	ア	ジ	

PL. XXIX

Fig.	1.	<i>Megalaspis coriyla</i> (Linné)
	2.	<i>Caranx equula</i> Temminck & Schlegel
	3.	<i>Caranx sexfaciatus</i> Quoy & Gaimard
	4.	<i>Caranx delicatissimus</i> (Döderlein)
	5.	<i>Trachurus japonicus</i> (Temminck & Schlegel)
	6.	<i>Decapterus russelli</i> (Rüppell)
	7.	<i>Decapterus muradsi</i> (Temminck & Schlegel)

第三十圖版

一	イ	ボ	ダ	ヒ	
二	マ	ナ	ガ	ツ	ラ
三	ラ	ン	ジ	ク	ダ
四	ネ	ン	ブ	ツ	ダ
五	オ	キ	ヒ	イ	ラ
六	タ		カ		ベ
七	シ		イ		ラ

PL. XXX

1.	<i>Psenopsis anomala</i> (Temminck & Schlegel)
2.	<i>Stromateus argenteus</i> (Euphrasen)
3.	<i>Apogon lineatus</i> Temminck & Schlegel
4.	<i>Apogon semilineatus</i> Temminck & Schlegel
5.	<i>Leiognathus rivulata</i> (Temminck & Schlegel)
6.	<i>Labracoglossa argentiventris</i> Peters
7.	<i>Coryphaena hippurus</i> Linné

第三十一圖版

一	イ	シ	ガ	キ	ダ	ヒ
二	ラ	ン	ダ	グ	ダ	ヒ
三	イ	シ	グ	ダ	ヒ	
四	ギ	ン	カ	ガ	ミ	
五	ア	カ	タ	チ		
六	ス				ギ	

PL. XXXI

1.	<i>Oplegnathus punctatus</i> (Temminck & Schlegel)
2.	<i>Eyistias acutirostris</i> Temminck & Schlegel
3.	<i>Oplegnathus fasciatus</i> Temminck & Schlegel
4.	<i>Mene maculata</i> (Bloch & Schneider)
5.	<i>Acanthocephala krusensterni</i> (Temminck & Schlegel)
6.	<i>Rachycentron canadum</i> (Linné)

第三十二圖版

一	ウ	ミ	ブ	ナ	
二	ム			ツ	
三	ア			ラ	
四	ス		ズ	キ	
五	イ	シ	ナ	ギ	

PL. XXXII

1.	<i>Malakichthys griseus</i> Döderlein
2.	<i>Seombrops hoops</i> (Houttuyn)
3.	<i>Nippon spinosus</i> Cuvier & Valenciennes
4.	<i>Lateolabrax japonicus</i> (Cuvier & Valenciennes)
5.	<i>Stereolepis isinagi</i> (Hilgendorf)

第三十三圖版

一	コ	モン	ハ	タ	
二	ア	オ	ア	ラ	
三	ル	リ	ハ	タ	
四	マ		ハ	タ	
五	ア	カ	ハ	タ	
六	ホ	ウ	セ	キ	ハ

PL. XXXIII

1.	<i>Epinephelus epistictus</i> (Temminck & Schlegel)
2.	<i>Epinephelus awoara</i> (Temminck & Schlegel)
3.	<i>Anlacocephalus temminckii</i> Bleeker
4.	<i>Epinephelus septemfasciatus</i> (Thunberg)
5.	<i>Epinephelus fasciatus</i> (Forskål)
6.	<i>Epinephelus chlorostigma</i> (Cuvier & Valenciennes)

第三十四圖版

一	イ		サ	キ	
二	ジ	ン	ナ	ラ	
三	シ	マ	イ	サ	キ
四	ス	ミ	ツ	キ	ハ
五	サ	ク	ラ	ダ	ヒ
六	フ	カ	ム	ツ	
七	フ	カ	イ	サ	キ

PL. XXXIV

1.	<i>Parapristipoma trilineatum</i> (Thunberg)
2.	<i>Therapon servus</i> (Bloch)
3.	<i>Therapon oxyrhynchus</i> Temminck & Schlegel
4.	<i>Selenanthias analis</i> Tanaka
5.	<i>Saoura margaritacea</i> (Hilgendorf)
6.	<i>Doederleinia berycoides</i> (Hilgendorf)
7.	<i>Caprodon schlegelii</i> (Günther)

第三十五圖版

一	ヒ	ゲ	グ	ヒ
二	コ	シ	ョ	ウ
三	イ	ト	ヨ	リ
四	タ	カ	サ	コ
五	メ		ジ	ナ
六	ハ		ダ	ヒ
七	ク	チ	ビ	ダ

第三十六圖版

一	マ		ダ	ヒ
二	チ		ダ	ヒ
三	エ	ビ	ス	ダ
四	キ		ダ	ヒ
五	ク	ロ	ダ	ヒ

第三十七圖版

一	ウ	ミ	タ	ナ
二	キ			ス
三	イ	シ	モ	ヂ
四	ニ			ペ
五	ア	マ	ダ	ヒ
六	マ	ト	ダ	ヒ
七	タ	カ	ノ	ハ

第三十八圖版

一	キ	ウ	セ	ン
二	キ	ウ	セ	ン
三	サ	サ	ノ	ハ
四	サ	サ	ノ	ハ
五	テ		ン	ス
六	キ	ツ	ネ	ダ
七	ブ		ダ	ヒ
八	カ	ン	ダ	ヒ

第三十九圖版

一	ニ	ザ	ダ	ヒ
二	ツ	ノ	ダ	ヒ
三	ツ	バ	メ	ウ
四	ゲ	ン	ロ	ク
五	カ	ゴ	カ	ト
六	ハ	タ	タ	ナ

第四十圖版

一	ア		イ	ゴ
二	ウ	マ	ヅ	ラ
三	カ	ワ		ハ
四	モ	ン	ガ	ラ
五	ク	リ	ビ	マン
六	マ		ン	ボ

PL. XXXV

Fig.	1.	Haplogenygys nigripinnis (Temminck & Schlegel)
	2.	Plectrohynchus cinctus (Temminck & Schlegel)
	3.	Euthyopteroma virgatum (Houttuyn)
	4.	Caesio chrysozona (Kuhl & Van Hasselt)
	5.	Girella punctata Gray
	6.	Sparus aries (Temminck & Schlegel)
	7.	Lethrinus choerorhynchus (Bloch & Schneider)

PL. XXXVI

1.	Pagrosomus major (Temminck & Schlegel)
2.	Eynniss cardinalis (Lacépède)
3.	Eynniss edita (Tanaka)
4.	Taius tunifrons (Temminck & Schlegel)
5.	Sparus macrocephalus (Basilewsky)

PL. XXXVII

1.	Ditrema temmincki (Bleeker)
2.	Sillago sihama (Forskål)
3.	Sciaena schlegeli (Bleeker)
4.	Sciaena mitsukurii (Jordan & Snyder)
5.	Branchiostegus japonicus (Houttuyn)
6.	Zeus japonicus Cuvier & Valenciennes
7.	Goniistius zonatus (Cuvier & Valenciennes)

PL. XXXVIII

1.	Halichoeres poecilopterus (Temminck & Schlegel)
2.	Ditto, female
3.	Duymaeria flagellifera (Cuvier & Valenciennes)
4.	Pseudolabrus japonicus (Houttuyn)
5.	Iniistius dea (Temminck & Schlegel)
6.	Verro oxycephalus (Bleeker)
7.	Calotomus japonicus (Cuvier & Valenciennes)
8.	Semicossyphus reticulatus (Cuvier & Valenciennes)

PL. XXXIX

1.	Xesurus scalpaum (Cuvier & Valenciennes)
2.	Zanclus canescens (Linné)
3.	Platax teira (Forskål)
4.	Chaetodon modestus Temminck & Schlegel
5.	Microcanthus strigatus (Cuvier & Valenciennes)
6.	Heniochus diphreutes Jordan

PL. XL

1.	Siganus fuscescens (Houttuyn)
2.	Cantherines modestus (Günther)
3.	Monacanthus cirrhifer Temminck & Schlegel
4.	Balistes conspicillum Bloch & Schneider
5.	Ranzania makua Jenkins
6.	Mola mola (Linné)

第四十一圖版

一	ヒ	ガ	ン	フ	グ
二	マ			フ	グ
三	ト	ラ	フ	グ	
四	ハ	リ	ヒ	ン	ボン
五	ハ	コ	フ	グ	
六	イ	ト	マ	キ	フ

第四十二圖版

一	タ	ク	ノ	コ	メ
二	キ		チ		ヂ
三	バ	ラ	メ	ス	ケ
四	ア		コ		ウ
五	ク	ロ	ゾ		イ
六	メ		バ		ル

第四十三圖版

一	カ		サ		ゴ
二	フ	サ	カ	サ	ゴ
三	モ				ヨ
四	ハ	オ	コ	ゼ	
五	ミ	ノ	カ	サ	ゴ
六	ア	イ	ナ	メ	
七	オ	ニ	オ	コ	ゼ

第四十四圖版

一	ハ	リ	カ	ジ	カ
二	イ	ネ	ゴ	チ	
三	ホ	ウ	ボ	ウ	
四	コ			チ	
五	ソ	コ	ホ	ウ	ボ
六	ホ	シ	セ	ミ	ホ
七	ア	サ	ヒ	ア	ナ
八	ア		カ	ゴ	チ
九	カ	ナ	ガ	シ	ラ
十	コ	バ	ン	イ	タ

第四十五圖版

一	バ	バ	ガ	レ	イ
二	ホ	シ	ガ	レ	イ
三	オ	ヒ	ヨ	ウ	
四	マ	ツ	カ	ワ	
五	ヒ		ラ	メ	
六	ム	シ	ガ	レ	イ

第四十六圖版

一	ヤ	ナ	ギ	ム	シ
二	マ	コ	ガ	レ	イ
三	サ	メ	ガ	レ	イ
四	メ	イ	タ	ガ	レ
五	イ	シ	ガ	レ	イ
六	ウ	シ	ノ	シ	タ
七	ツ	ル	マ		キ

PL. XLI

Fig.	1.	Spheroides pardalis (Temminck & Schlegel)
	2.	Spheroides porphyreus Temminck & Schlegel
	3.	Spheroides rubripes (Temminck & Schlegel)
	4.	Diodon holacanthus Linné
	5.	Ostracion immaculatum Temminck & Schlegel
	6.	Aracana aculeata (Houttuyn)

PL. XLII

1.	Sebastodes joyneri (Günther)
2.	Sebastolobus macrochir (Günther)
3.	Sebastodes baranmenuke Wakiya
4.	Sebastodes matsubarae (Hilgendorf)
5.	Sebastodes schlegeli Hilgendorf
6.	Sebastodes güntneri Jordan & Starks

PL. XLIII

1.	Sebastiscus marmoratus (Cuvier & Valenciennes)
2.	Scorpaena fimbriata Döderlein
3.	Sebastichthys elegans (Steindachner & Döderlein)
4.	Hypodytes rubripinnis (Temminck & Schlegel)
5.	Pterois lunulata Temminck & Schlegel
6.	Hexagrammos otokii Jordan & Starks
7.	Inimicus japonicus (Cuvier & Valenciennes)

PL. XLIV

1.	Myxocephalus polyacanthocephalus (Pallas)
2.	Thysanophrys crocodilus (Tilesius)
3.	Chelidonichthys kumu (Lesson & Garnot)
4.	Platycephalus indicus (Linné)
5.	Pterygotrigla hemisticta (Temminck & Schlegel)
6.	Daicocus peterseni (Nyström)
7.	Pseudoblennius cottoides (Richardson)
8.	Bembras japonicus Cuvier & Valenciennes
9.	Lepidotrigla strauchi Steindachner
10.	Leptecheneis naucrates (Linné)

PL. XLV

1.	Microstomus stelleri Schmidt
2.	Verasper variegatus (Temminck & Schlegel)
3.	Hippoglossus stenolepis Schmidt
4.	Verasper moseri Jordan & Gilbert
5.	Paralichthys olivaceus (Temminck & Schlegel)
6.	Xystrias grigorjewi (Herzenstein)

PL. XLVI

1.	Microstomus kitaharae Jordan & Starks
2.	Limanda yokohamae (Günther)
3.	Clidoderma asperrium (Temminck & Schlegel)
4.	Pleuronichthys cornutus (Temminck & Schlegel)
5.	Kareius bicoloratus (Basilewsky)
6.	Rhinoplagusia japonica (Temminck & Schlegel)
7.	Zebrias zebrinus (Temminck & Schlegel)

第四十七圖版

一	ト	ビ	ハ	ゼ
二	ボ	ウ	ズ	ゴ
三	ハ	タ	ハ	タ
四	ニ	シ	キ	ハ
五	ク	キ	タ	ロ
六	マ		ハ	ゼ
七	ム	ツ	ゴ	ロ
八	ミ	シ	マ	オ
九	シ	マ	ハ	ゼ
十	ワ	ラ	ス	ボ

第四十八圖版

一	ク	ラ	カ	ケ
二	ノ	ド	ク	サ
三	ノ	ド	ク	サ
四	オ	キ	ト	ラ
五	ア	カ	ス	メ
六	イ	カ	ナ	ゴ

第四十九圖版

一	カ	エ	ル	ウ
二	ダ	イ	ナ	ン
三	ギ		ン	ボ
四	ス	ケ	ト	ウ
五	ソ	コ	ヒ	ゲ
六	タ			ラ
七	コ		マ	イ

第五十圖版

一	ソ	ロ	イ	ヒ
二	ナ	ガ	ヅ	カ
三	イ	タ	チ	ウ
四	ヨ	ロ	イ	タ
五	フ	カ	ダ	ツ
六	ア	ン	コ	ウ
七	イ	ザ	リ	ワ

PL. XLVII

Fig.	1.	Periophthalmus cantonensis (Osbeck)
	2.	Sicyopterus japonicus (Tanaka)
	3.	Arctoscopus japonicus (Steindachner)
	4.	Pterogobius virgo (Temminck & Schlegel)
	5.	Rheopresbe fujiyamae Jordan & Starks
	6.	Acanthogobius flavimanus (Temminck & Schlegel)
	7.	Boleophthalmus pectinirostris Gmelin
	8.	Uranoscopus japonicus Houttuyn
	9.	Tridentiger bifaciatus Steindachner
	10.	Taenioides lacepedei (Temminck & Schlegel)

PL. XLVIII

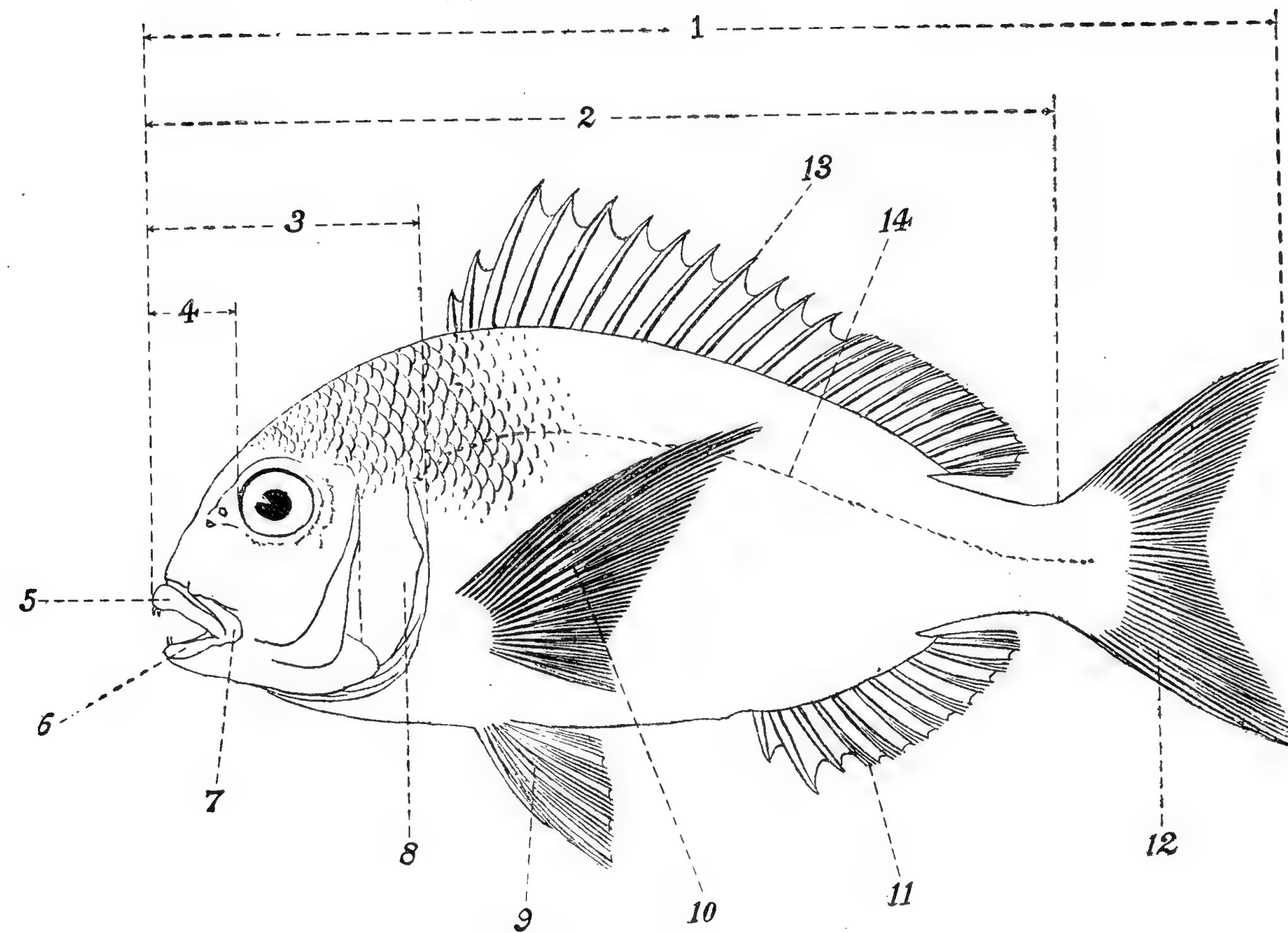
1.	Neopercis sexfasciata (Temminck & Schlegel)
2.	Callionymus vallenciennesi Temminck & Schlegel, male
3.	Ditto, female
4.	Neopercis multifasciata (Döderlein)
5.	Callionymus ativelis Temminck & Schlegel
6.	Ammodytes personatus Girard

PL. XLVIII

1.	Salarias enoshimae (Jordan & Snyder)
2.	Dictyosoma bürgeri Van der Hoeven
3.	Enedrias nebulosus (Temminck & Schlegel)
4.	Theragra chalcogramma (Pallas)
5.	Haloporphyrus oidema Tanaka
6.	Gadus macrocephalus Tilesius
7.	Eleginus navaga (Kolreuter)

PL. L

1.	Coclorhynchus parallelus (Günther)
2.	Dinogonellus grigorjewi (Herzenstein)
3.	Brotula multibarata Temminck & Schlegel
4.	Hoplobrotula armata (Temminck & Schlegel)
5.	Haliutaea stellata (Vahl)
6.	Lophiomus setigerus (Vahl)
7.	Antennarius tridens (Temminck & Schlegel)



魚類外形の術語圖解

1. 全長	Total length	8. 鰓蓋	Operculum
2. 體長	Body length	9. 腹鰭	Ventral fin
3. 頭長	Head length	10. 胸鰭	Pectoral fin
4. 吻長	Snout length	11. 臀鰭	Anal fin
5. 前上顎骨	Pre-maxillary	12. 尾鰭	Caudal fin
6. 下顎骨	Dentary	13. 背鰭	Dorsal fin
7. 主上顎骨	Maxillary	14. 側線	Lateral line

オツトセイ
Callotaria ursina (Linné)
（第一圖版 第一圖）×¹/₁₀

頭部は丸く眼大形なり。胴部は長く體長牡は2米、牝1米に達す。四肢は共に短小にして鰭狀をなし、前肢は游泳及歩行に兼用し趾は内方のは外方より長し、後肢は游泳の際に掛の用をなし其趾は殆ど等長なり。齒式は門²/₃、犬¹/₁、前³/₂、臼³/₃=36なり。唇薄く髭は粗にして剛し。體色は年齢により相違し、成長せるものは背面暗褐黑色、腹面は淡くして僅に白色を帶ぶ。

オツトセイは北太平洋と南半球とに棲息し、北太平洋にあるものの毛皮は南半球のものよりも優良にして且産額遙に多大なり。其棲息場所は樺太の海豹島、露領コンマンドルスキー群島、米領プリビロフ群島等著名なり。

北太平洋に於ては1年を通じ唯1回夏期蕃殖場へ上陸するのみにして他の時期は常に海上を洄游して生活す。海豹島にては五月下旬より六月の央ば頃まで先づ幾千頭の牝獸來集し續いて同月央ば過ぎより牝獸來島し初め七月中旬頃迄に全部到着し、其數實に數萬に達す。極端なる一夫多妻の動物にして最も有力なる牡は牝の上陸する絶好の地點を占領し、續々來着する牝獸を自己の領域内に誘致し以て一群團を造る。牝獸は數個月間晝夜の別なく不眠不休且絶食にて牝獸の爭奪と交尾とに全力を盡し大體交尾期の終了と共に八月中旬に至り疲勞せる體を横へて海上に浮び出で食物を索めつゝ南方に向ふ。牝は來島するや一兩日中に1兒を分娩す。其時期は六月中旬より七月末日迄の間なり。分娩終るや程なく交尾す。即ち妊孕期間は滿1個年なり。牝獸は稚仔の哺育並に養育のため尙1個月以上殘留するも十月に至れば稚仔と共に全部海上に去る。牡は第7年、牝は第8年にて成熟す。

此獸の視覺は鋭敏ならざるも嗅官は能く發達し、若し風上より近づく時は半哩乃至1哩の距離にありて水面に熟睡せるものにも能く覺醒して起き上る。聽官も亦鋭敏にして微弱の音響にても感知し能く逃避す。

毛皮は差毛を抜き毳毛を黒、金茶或はチヨコレート色に染色し主として婦人外套に利用し、獸肉は食用に供す。

臘納獸保護條約の結果、北太平洋全體に其數を増加し海豹島のみにも保護實施前の上陸數7,000頭なりしもの最近の實數(昭和二年)は實に約30,000頭に達せり。

フィリアザラシ
Phoca largha Pallas
（第一圖版 第二圖）×¹/₃

頭部圓く吻狭小にして中央に1溝あり。耳は耳殻を缺ぐ。前肢の趾は短く、後肢の趾は長さ僅に不等にして第三趾最短なり。齒式は門³/₂、犬¹/₁、前³/₁、臼²/₂=34なり。體色は體の上部帶黒灰色にして歪形小黑點の灰色に縁取れる斑紋を散布し殊に背部にては小形にして密なり。

腹面 帶白、四肢は灰褐色を帶ぶ。體長1.5米に達す。幼仔は全體淡黃色にして上部は暗灰色なり。

本種は勘察加より樺太、千島諸島に亘りて棲息す。性質群居を好み遠洋に出でず。常に沿岸の岩礁に登りて憩ふ習性あり。陸上の動作は甚だ遲鈍なり。食餌は主として魚類、軟體類を攝取す。毳毛なく毛皮として價值なし。

アシカ
Zalophus lobatus Gray
（第一圖版 第三圖）×¹/₁₂

形態は能くオツトセイに酷似す。頭部圓く耳殻は明かに稍尖れり。四肢は鰭狀を呈し黠面は裸出す。齒式は門³/₂、犬¹/₁、前³/₃、臼²/₂=34なり。牡の大なるものは2.5米、牝は1.5米に達す。體色暗褐色にして微かに蒼白色の斑紋あり。牝は牡よりも色淡く、稚仔は殆んど黑色なり。皮膚に毳毛なきを以て毛皮として價值なし。肉と脂肪とを利用す。肉は他の海産哺乳類に比し遙に美味なり。

オツトセイに似、一夫多妻にして五、六月の候1—2兒を分娩す。獸群は海上に横臥し、或は岩礁に睡眠する間にも其内1頭は常に警戒の任に當り若し危急の難到らば忽ち叫聲を放ちて同類を覺醒し海中に遁逸せしむ。食餌は魚類のみを採る。

我國にては津輕海峽以南に棲息し、南方遙かに比律賓、濠洲、ニユージーランドに生活するものと同種に屬す。

尙津輕以北に棲息するものは別種にして *Eumetopias jubata* (Schreber) と稱す。體形更に大にして最大なる牡は4米、牝は3米に達し、體色は蕃殖期には淡き赤褐色、冬毛は淡きセビア色又はバンダイク褐色にして下部濃色なり。

ラツコ
Enhydra lutris (Linné)
（第一圖版 第四圖）×¹/₆

頭部は小さく、胴は圓筒狀をなして肥大し後方に至り稍細る。頭胴の長さは、成長せるものにて約1.2米あり。尾の長さは頭胴の約四分之一に相當し、扁平狀にして鈍端をなす。四肢の趾は短くして太く、爪亦短小にして曲る。前肢は短小にして第三、第四の趾は互に癒着し、後肢は大形にして鰭狀を呈し五趾の間、蹠にて相連る。

齒式は門³/₂、犬¹/₁、前³/₃、臼¹/₂=52なり。下顎第一門齒の缺けたるは此種特徴の一にして之を以て他の裂脚食肉類と區別することを得。吻端及黠部は裸出す。

毛皮は幼若期にては淡褐色を呈し、稍粗なれども4年以上のものは濃茶褐色となり光澤益加り其後年と共に銀毛加はる。毳毛は軟く羊毛狀にして幼若期に少く成年期に達して密生するも差毛(上毛)は反對に減少す。毛皮の最大形は約2米の長さに達す。貴重毛皮中の白眉として推稱せらる。試みに指頭を以て文字を書けば明かに其跡を残す。之れ本毛皮の特色なり。

性質極めて臆病にして敏感なり。視覺及聽覺共に鈍なれども嗅覺は頗る發達す。夜間は岩礁上に眠り黎明陸地を離れ海上に浮べる鬼若布裘上にあり。時々潮流の激する所に集りて喜游す。食餌は海膽、蟹、貝類、章魚、烏賊、海藻の嫩芽等なり。陸上動作は甚だ遲鈍にして移行し僅に前肢を以て跛行するのみ。滿4年にして成熟す。一夫一妻にして分娩期は一定せず。母獸は次の兒の生るゝ迄哺育に當り、其後は父獸に引渡す。兒を愛するの情濃かなり。蕃殖力鈍く2、3年毎に1回分娩するものと如し。

北太平洋の北部にのみ棲息するものにして、我が千島より露領勘察加、コンマンドルスキー及米領アリウシアン諸島及アラスカの南方に亘りて分布す。

Callotaria ursina (Linné)
“**Ottosei**”
PL. I, fig. 1. ×¹/₁₀

Head round, eye large, body rather long. Limbs short and fin-shaped. Fore-limb terminated to an ovate form. Hind limb is ¹/₇ longer than the fore-limb, and phalanges ribbed on the membrane which unites them as the web. Lips thin; yellowish white and grey moustache consisted of long, stiff bristles. Dentition, i ²/₃, c ¹/₁, p ³/₂, m ³/₃=36. Colour of body much variable according to the age of animal; new born pup jet black, in adult dark, dull brown on back, fading towards the flank, and still more lightened on the belly. Attains to a length of 2 metres in male and 1.5 metres in female.

Occurs not only the coasts of the Pribilof, Commander Islands and eastern side of Saghalien, and from the southern parts of Kamtchatika to the Kurile Islands, but also on the coasts of the Islands in the southern hemisphere, from Cape Horn and the Folkland Island eastwards to Australia and New Zealand.

Polygamous habits; adult male lands early from the end of May to the middle of June, and followed by the female in June and July. Gestation period is just twelve months. Economically the pelt of this species in the southern hemisphere much inferior to that in the North Pacific region.

In the North Pacific Ocean increased rapidly under the protection, put in practice of the agreement among Canada, Russia, America and Japan, concluded in December 1911.

Phoca largha Pallas
“**Huiiri-azarasi**”
PL. 1, fig. 2. ×¹/₃

Head round, snout narrow, nostril situated on dorsal and no pinna. Fore-limb burried into the elbow and covered by the skin, but able to support the body. Hind limb stretched out backwards on each side of the tail, outer digits longer than the middle ones. Dentition, i ³/₂, c ¹/₁, p ³/₃, m ²/₂=34. Attains to a length of 1.5 metres. Colour of body in adult blackish grey, with small black spots on back, whitish on belly. Limbs greyish brown. New born pup faint yellow, with dull greyish colour on back.

Occurs abundantly in Kamtchatika, Saghalien and Kurile Islands, living always more or less gregariously in large or small companies, and wandering restricted to the neighbourhood of shores. The food of this species chiefly consists of fish, squids, etc. Not hunted for fur, but skin and oil.

Zalophus lobatus Gray
“**Asika**”
PL. I, fig. 3. ×¹/₁₂

Head round; external ear present; limbs fin-shaped; soles of feet wanted hair. Dentition, i ³/₂, c ¹/₁, p ³/₃, m ²/₂=34. There is a great difference in size between sexes, the male frequently twice that of female; the oldest one of the former from a length of 2.5 to 3 metres in average, while the a hult female attains to 1.5 metres. Colour of body brownish black, generally dusky in young, but gradually lightened with age, or toward the molting season. Except the fur, oil and skin for the commercial products.

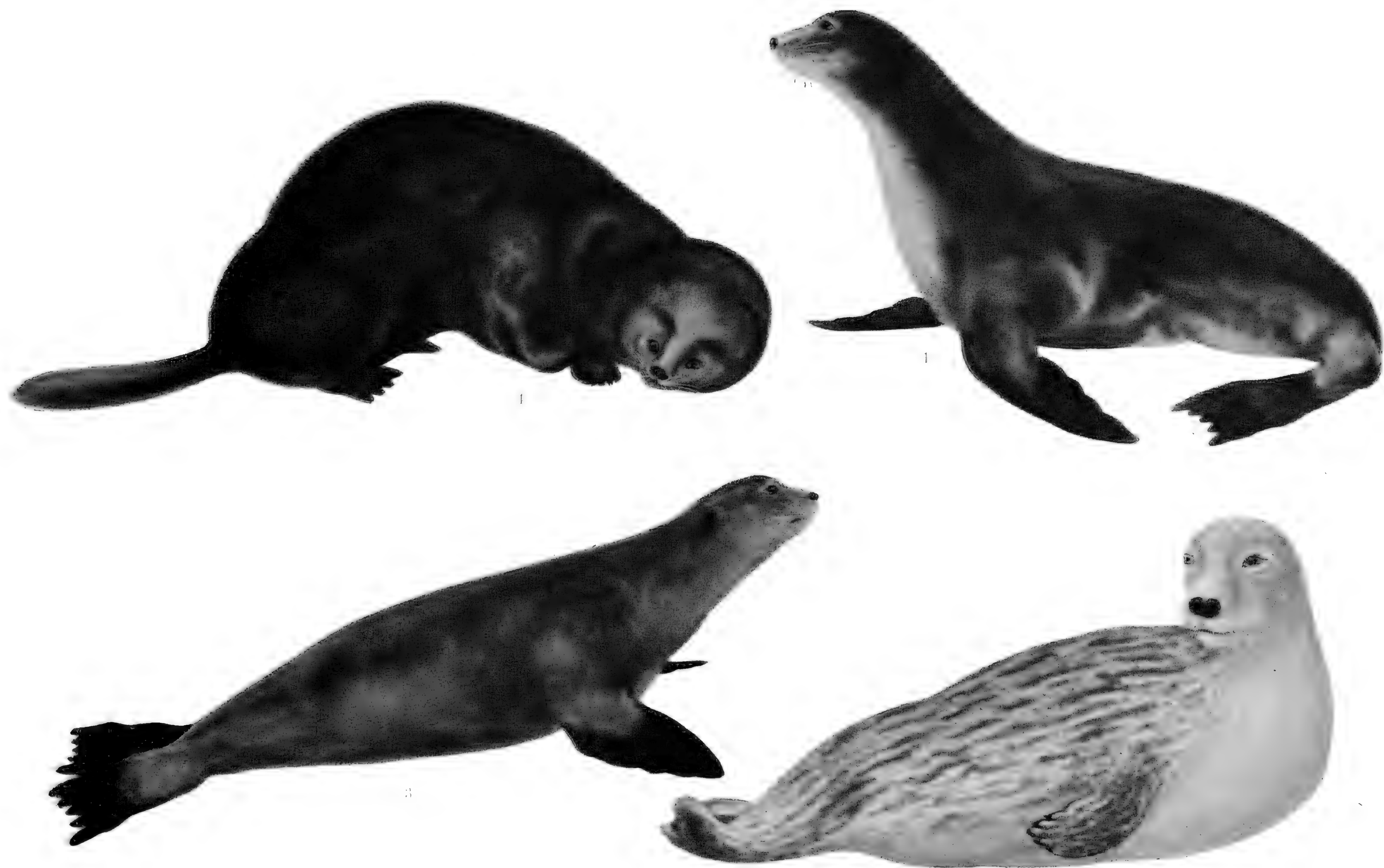
Lives with gregarious and polygamous habits. Pup born a month earlier than fur-seal, during the months of May & June. Occurs in Japanese southern coasts southwards Tugaru Strait, and also distributed on the coast of Philippines, Australia and New Zealand.

A closely allied species, *Eumetopias jubata* (Schreber), occurs in the northern part of Japan from Tugaru Strait. The largest species of the Otaries attains to a length 4 metres in male and 3 in female; colour of body reddish brown in the breeding season, faint sepia or vandyke brown in Winter.

Enhydra lutris (Linné)
“**Rakko**”
PL. I, fig. 4. ×¹/₆

Head small; trunk cylindrical, slender backwards. Body attains to a length of 1.2 metres and length of flat tail about ¹/₄ that of body. Limbs short and thick. Fore limb small, third and fourth digits fused. Hind limb big and fin-shaped and five phalanges united with the web-membrane. Dentition, i ³/₂, c ¹/₁, p ³/₃, m ¹/₂=32. Snout and soles of limb wanted hair. New born pup dull brown in colour, but in adult dense chocolate brown. Commercial value of this fur is the highest among the marine beasts. The principal food consists of sea-urchin, crabs, mollusca and sea-weeds.

Monogamous, but the calving period unkown. Occurs in the North Pacific region only, ranging from the coast of Kamtchatika to the Commander and to the Kurile Islands. For the production of fur the Kurile Islands are considered the best places all the world over.



ザ ト ウ ク チ ラ
Megaptera nodosa (Bonnaterre)
 （第二圖版　第一圖）　　× 1/10

　體軀巨大にして頭部扁平なり。下顎は上顎より突出し頭部及體側に疣状突起あり。鰓槽は咽喉より腹部に至り其數14—37條、前肢は長くして幅狭く體長の1/4よりも長し。之に反し背鰭は低くして肉厚く形狀多少鎌狀をなせり。　體色は背部及體側に亘りて黒色を呈し腹部淡し。前肢の外側は黒く内側白色なり。尾部も亦上面黒色下面白し。　鯨鬚の色は黒色にして其數540枚あり。　體長13—14米に達す。

　分布廣く太平洋及大西洋に棲息し、我近海にては冬期は紀州より臺灣に至る暖海に、夏期は金華山沖、千島、北海道より樺太に亘る水域に棲息す。その棲息に適する水温は攝氏 16—20 度にして食餌は浮游性の小蝦及小魚を捕食す。早春交尾し冬季に至り約 4 米位の稚仔を分娩す。肉は食用とし又其脂肪層より良質の鯨油を搾取し得べし。

シ ロ ナ ガ ス ク チ ラ
Balaenoptera musculus (Linné)
 （第二圖版　第二圖）　　× 1/10

　體軀頗る長大にして普通 20—25 米、往々 30 米の大形を見ることあり。　鯨族中のみならず尚現代生存する動物中の最大形に屬す。體形は前種より細長にして頭部は體長の1/3より稍短く、前肢は體長の約 15% 位の長鎌狀を呈し尖端圓し。背鰭は肛門腺の後方に位し小形にして厚鎌狀をなす。腹面の鰓槽は 50—60 條あり。

　體色は全體灰白色にして腹部は稍淡し。體の表面には白色の斑點あり。　鯨鬚は黒色にして長三角形をなす。

　北極より南極に至る迄、廣く分布し、我邦にては太平洋方面に多く、日本海及オホツク海に少し。夏期は北海道及千島方面にありて冬期は南下し紀州より九州に至る間に多し。單獨に游行することあるも多くは數頭の群をなし、往々五、十頭以上の大群を見ることあり。　噴氣は一直線にして空中高く 7—8 米に達す。　蓋し鯨族中噴氣の最高なるものにして清朗なる天候にては 4—5 哩の距離にても能く之を見ることを得べし。主として浮游性の小蝦 Euphausia 屬のものを採りて食餌とす。　冬期の終りより早春に亘り受胎し約 1 個年を経て 1 胎 1 兒を分娩す初生兒は約 6—7 米の體長を有す。

ナ ガ ス ク チ ラ
Balaenoptera physalus (Linné)
 （第二圖版　第三圖）　　× 1/10

　形態前種に比すれば稍細小にして、體長は普通 20 米内外、最大 26 米に達す。前肢は體長の約 12% に相當し、薙刀狀を呈して先端尖る。背鰭は肛門腺の直後にありて僅に鎌狀をなし後方に曲る。鰓槽は百餘條ありてシロナガスよりは遙に多數なり。　體色は背部及頸部は暗灰色、腹部は白色なり。下顎の右側に皮膚の白き部分あるは本種の特徴なり。　鯨鬚は前種の黒色なるに反し全體灰色に黄色又は白色の縦縞を有す。

　世界各地の海洋に棲息し我國にては太平洋、オホツク海、日本海、黃海の各所に棲息し殊に金華山沖合を第一とし千島近海及根室沖合、朝鮮の東西沿岸之に次ぐ好漁場とす。性群居を好み屢々數百頭の大群に出會ふことあり。水温 15—18 度の水域を好適度とす。本邦にて漁獲する鯨族中最多なるものにして全捕獲數の約半数に達す。

　食餌はシロナガスと同様 Calanus, Euphausia 等の小甲殻類を主食とし尙外に鰯、鰺等の小魚類を採りて食す。シロナガスと同様、早春受胎し冬期又は初春に 1 胎 1 兒を生む。初生兒の體長は 6—7 米なり。

イ ワ シ ク チ ラ
Balaenoptera borealis Lesson.
 （第二圖版　第四圖）　　× 1/80

　體形ナガスクデラに酷似して稍細小なり。體長普通 12—14 米、最大形 16—17 米に達す。鰓槽僅に 10 條餘あるのみ。背鰭は肛門線の直前にありて鎌狀をなす。

　體色背部は頭部より胸部に亘り暗灰色、腹部は淡き同色なり。　咽喉より胸の部分は乳白色を呈し、胸鰭は背腹兩面共に暗灰色なり。　鯨鬚は帶青黒色なり。

　世界各地の太平洋に棲息す。我近海にては金華山沖を最好の漁場とし南千島より根室附近及九州五島、紀州大島等之に次ぐ捕獲地なり。　棲息所の最適水温は攝氏 12—20 度なり。　噴氣は白長簍と同様一直線に上る。其高さ 3—4 米位、呼吸の音は金屬性音響を發し 1 哩の遠所より能く聞知することを得べし。

　食餌は浮游性の小甲殻類殊に Calanus 及 Euphausia を嗜好す。交尾並に分娩期共に大體はナガスクデラと同様なり。　初生兒の體長は 5 米に達す。

セ ミ ク チ ラ
Balaena glacialis Bonnaterre
 （第二圖版　第五圖）　　× 1/10

　體軀巨大にして殊に頭部は體長の1/3以上に及ぶ。上顎は弓狀に彎曲し上顎より長さ 3 米餘の長き鯨鬚を垂下す。鬚數 360 枚を算ふ。咽喉部に鰓槽なく又背鰭を缺如す。頭部には「ボンネット」と稱する一隆起あり。　噴氣孔も隆起す。　體色は全體光澤ある漆黒色にして咽喉部と前肢には所々に白色の部分あり。　鯨鬚も亦黒色なり。

　北太平洋特産種にして我國にてはオホツク海、日本海及太平洋に亘り廣く分布し、往時は多數棲息せしも明治初年頃、外國密獵船の爲に濫獲せられ現時は頗る減少し、1 個年僅に數頭の獵獲あるのみ。

　食餌は浮游性の小蝦を主とし翼足類及微小なる軟體類を捕食す。

　肉及皮膚は食用に供し脂肪層より良質の鯨油を得。

コ ク チ ラ
Rhachianectes glaucus (Cope)
 （第二圖版　第六圖） 1/80

　體軀は肥大し、上顎は中等に彎曲し、咽喉部の鰓槽は牝に於ては 2 條、牝に於ては 3 條なるを普通とす。背鰭を缺如す。前肢は太く短く先端は圓し。　體長は平均 13 米、通常牝は牡よりも大形にして最大形 15 米に達す。體色全體は石版様黒色にして所々に不規則なる白斑點あり、鯨鬚は殆んど白色なり。

　北太平洋の産にして北米西海岸と日本近海に棲息す。但し北米にては濫獲のため絶滅に近く殆んど獵獲を見ずと云へり。

　夏時はオホツク海に棲息し冬期南海に移動す。朝鮮蔚山沖は十一月より一月に至り南下の際通過し、再び三月下旬より五月に至り同一海面を北上するを以て唯一の好漁場と稱せらる。冬期暖海に下りて南下するは分娩、交尾をなし翌冬時期を違へず再來する習性より妊孕期は滿 1 個年なりと信ぜらる。食餌は浮游性の小蝦を主とし外に蟹及海鼠類を食す。

Megaptera nodosa (Bonnaterre)
“Zatô-kudira”
 PL. II, fig. 1.　　× 1/10

　Body large; head flat; lower jaw being longer and projecting beyond upper jaw; has a wart like protuberance on head and lateral sides of body. Throat plaits not so many; 14—34 furrows are counted between the pectoral fins. Pectral fins long and narrow, longer than quarter of body length. Dorsal fin not very prominent, and falcate in form.　Colour of body black above, white below, and under sides of pectoral and caudal fins also white. Baleen entirely black, with 540 laminae in number. The whale reaches a length of 13—14 metres.

This whale inhabits Atlantic as well as Pacific Ocean. Apparently, this whale spends the Winter in the warm seas between the coast of Kii Province and of Formosa; and migrates northwards in the Summer into cold waters, off Kinkwazan as far as Hokkaido. This species feeds upon small Crustacean and Fish. The flesh is esteemed as food in Japan, and good oils are obtained from its layer of fat.

Balaenoptera musculus (Linné)
“Sironagasu-kudira”
 PL. II, fig. 2.　　× 1/120

A huge animal reaching a length of 20—25 metres, rarely of 30 metres. This is the largest of the whales, and indeed of all living animals. Body elongated; head little shorter than 1/3 of whole body. Pectoral-fins large, about 15% of total length of body. Dorsal fin situated on posterior position of anal-line. Longitudinal folds in throat region up to 50—60. Colour grey slate above, white below. Baleen black and long and triangular in shape.

Their range is world-wide. In Japan, this species is found more abundantly on Pacific coast than in Sea of Japan and of Okhotsk. The whale migrates into northern regions near Hokkaido in Summer; and spends the winter in the warm seas near the southern Pacific coast of Japan. It feeds upon Crustacea; mainly, it appears, upon a species of Euphausia.

A single calf at a birth is born in the early Spring; the young when born is 6—7 metres long.

Balaenoptera physalis (Linné)
“Nagasu-kudira”
 PL. II, fig. 3.　　× 1/10

Body of this species much more slender than that of former; generally reaches a length of 20 metres, sometimes of 26 metres in the largest specimens. Pectoral fins falcate and pointed, their length being about 12% of the whole length. Dorsal fin falcate, and bent backward; being situated behind anal line. Total numbers of longitudinal folds in throat region estimated at more than 100. Colour bluish-black above, white below. Baleen and bristles dark-grey with mottled yellow and white.

Their range is world-wide. The best hunting ground in Japan is the sea off Kinkwazan, Miyagi Prefecture. It is stated that a shoal of several hundreds are often met with, off the above coast. The whales of this species are the most numerous in Japanese waters.

The food of this species consists of surface animals, namely Calanus, Euphausia, Herrig and Sardine, etc.

They breed in the Winter or in the early Spring. The period of gestation is about a year. A single calf at a birth; the young when born is 6-7 metres in length. (Fig. 3.—From Dr. N. Takahashi’s sketch.)

Balaenoptera borealis Lesson
“Iwasi-kudira”
 PL. II, fig. 4.　　× 1/80

Form rather more slender than that of former species, generally reaches a length of 12 to 14 metres maximum size belng 16 to 17 metres. Throat plaits very few, only ten furrows being counted.

Dorsal fin situated in front of vertical line of anal line. Colour bluish-black above, and white below. The part from throat to pectoral portion is milky-white with oblong shape. Pectoral fins blackish-grey on both sides. Baleen bluish-black.

Their range is world-wide. Best hunting ground in Japan is area off coast of Kinkwazan, Miyagi Prefecture. This species seems to feed entirely on Crustancea, chiefly little Copepod, Calanus and Euphausia.

It produces a single calf at a birth; the young when born, is 5 metres long. (Fig. 4.—From Dr. N. Takahashi’s sketch.)

Balaena glacilis Bonnaterre
“Semi-kudira”
 PL. II, fig. 5.　　× 1/80

Body large; head enormous, more than one-third length of body. Upper jaw slightly arched. Baleen long and black, with laminae 360 in number. They are finer and longer than those of other whales. No throat plaits and no dorsal fin. A very singular feature of this species is the so-called “bonnet,” which is a horny, irregular mass growing on the snout. Spiracle also elevated.

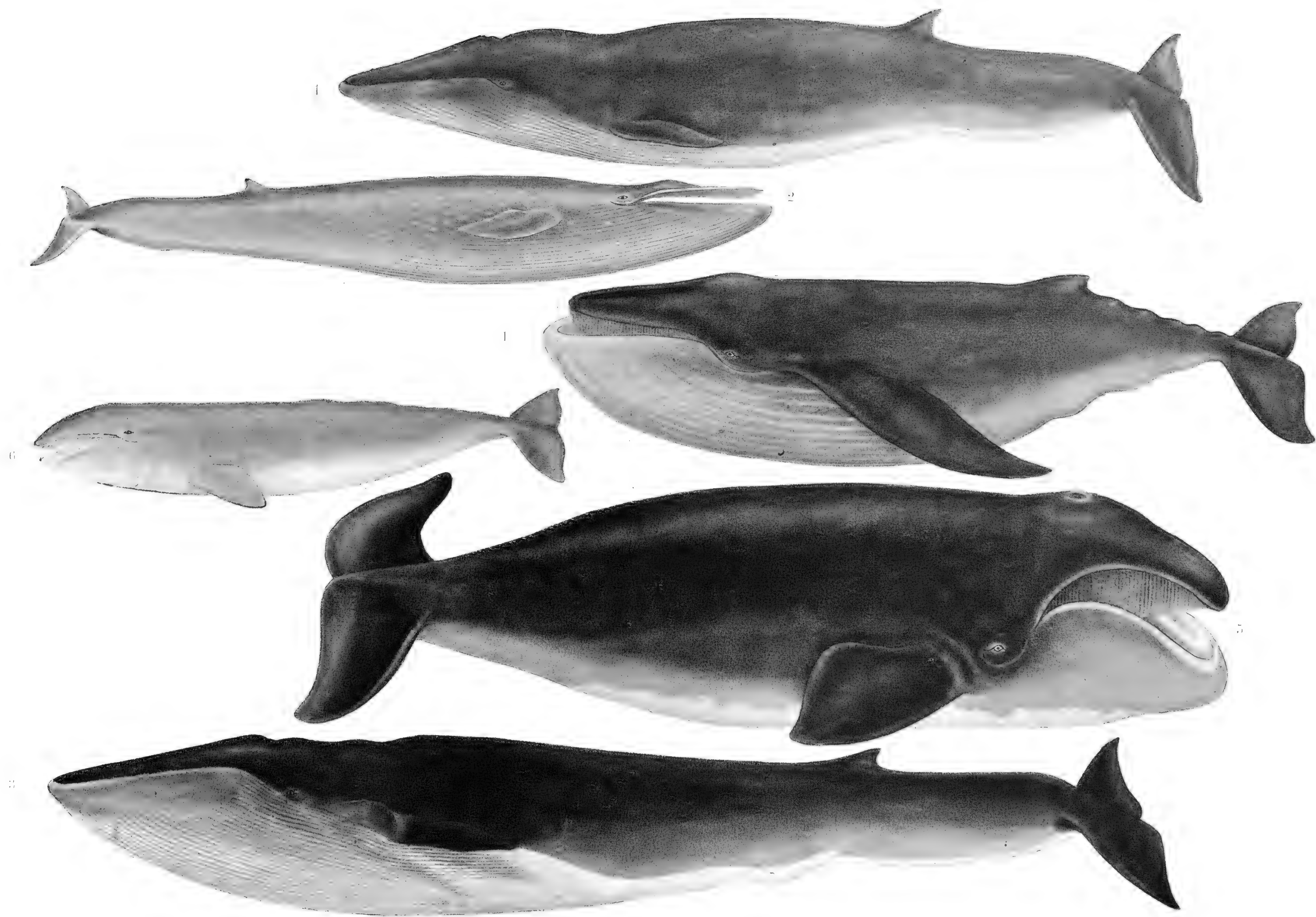
Colour of body black, but with white spots on the throat and pectoral fins. Baleen also entirely black.

It inhabits the North Pacific Ocean. It is said that this species was at one time, i. e. nearly 50 years ago, abundant off the northern coast of Japan. But owing to the activity of the whale fishery carried on since the last part of the previous century by foreign vessels, this species of whale has now become scarce.

Rhachianectes glaucus (Cope)
“Ko-kudira”
 PL. II, fig. 6.　　× 1/80

Body large; upper jaw moderately curved; throat plaits reduced to two in male and to three in female. Dorsal fin none; pectoral fins ovate, short, and broad. The length of a full grown example is 13 metres on the average, but, generally, the female is much longer than the male, being more than 15 metres in length. Body dark slate with mottled grey. Baleen nearly white in colour.

This species is limited so far as is known to the Pacific coast of North America and the Sea of Japan. It spends the Summer months in the Sea of Okhotsk and descends southwards at the beginning of Winter, into the warm seas. The first whales of the season begin to pass Urusan, Korea, on their way southwards, from November to January; and again they migrate northwards, passing through the same area of the sea in May. They feed chiefly upon small shrimps, crabs, and sea-cucumbers.



マツコウチラ
Physeter macrocephalus Linné
(第三圖版 第一圖) × ¹ / ₁₀

體軀巨大にして、頭部は著しく大なり。吻端は鈍角を呈し、噴氣孔は吻端左側に一個あり。背鰭を缺如し其代りに數個の著しき肉峰あり、齒は下顎にのみありて其數40—50本を具ふ。

體長は平均14米、最大23米に達す。體色は光輝ある暗灰色を呈し、下顎と吻端とは其色稍淡し。胸鰭は小さく、若成獣にても漸く1米に過ぎず。尾鰭は大なり。世界各地の暖海に棲息するも、特に我が金華山沖合は絶好の漁場なり。毎年七月より十一月に至る間を漁期とす。最も棲息に適する水温は攝氏20—22度の範圍なり。

食餌は海底深く潛入して、深海産の人形なる柔魚及甲烏賊類を捕食す。

本種の鯨油は品質優等なり、特に額骨内にあるものを鯨腦油と稱し機械油として賞用せらる。

ツチクチラ
Berardius bairdii Stejneger
(第三圖版 第二圖) × ¹ / ₁₀

體軀肥大し頭部稍圓く。吻は突出す。齒は下顎前端及其後方に位して二對あり、背鰭は後部にありて小さく、胸鰭も亦小にして圓し。噴氣孔は新月形にして體の正中にあり。體長9米に達す。體色灰黑色なり。

本種は北太平洋に棲息し、我國にては房州沖にて捕獲せらる。此鯨の脂肪より精製したる油は其色淡黄にて臭氣少く優等なるものなり。

ゴンドウチラ
Globiocephala scammoni Cope.
(第三圖版 第三圖) × ¹ / ₁₀

體軀稍延長し、頭部圓く稍大なり。背鰭は體の中央よりも僅に前方に位し、大形にして錐狀をなし、胸鰭は狭長にして先端尖る。齒は少數にして兩顎の前半に列生す。體色は黑色なり。體長8米に達す。

本種は北太平洋に分布し、肉及皮は食用とし脂肪は鯨油を精製す。

スナメリ
Neophocaena phocaenoides (Cuvier)
(第三圖版 第四圖) × ¹ / ₂₀

體軀延長し、體長4米内外あり。吻端圓く、吻を有せず。又全然背鰭を缺けるは前種と區別する點なり。胸鰭は殆んど卵圓形、齒式は $\frac{18}{18}$ ＝72なり。

體色全體黑色にして上唇と咽喉部とに各一個の藍色の斑紋あり。

マイルカ
Delphinus dussumieri Blanford
(第三圖版 第五圖) × ¹ / ₂₀

頭部小さく、吻は嘴狀をなして突出し頭蓋骨の約七割に相當す。齒は小形にして圓錐狀をなし、其先端後方に曲れり。齒式は $\frac{56}{56}$ — $\frac{65}{65}$ なり。背鰭は背部の中央にありて錐狀を呈し、胸鰭は狭くして末端鋭形なり。體長3乃至5米に達す。

體色は背部、吻及背鰭は蒼黑色にして腹部白し。本種は印度洋及太平洋に産し、本邦の内灣、近海に於ても時に大群を爲して游泳し、盛に水面を跳躍して魚群を追ふ。春期一仔を分娩す。幼仔は體長500糎内外ありて日邊1—7本の鬚を有す。

肉及油は實用に供し、脂肪は機械油に精製す。

カマイルカ
Lagenorhynchus obliquidens Gill
(第三圖版 第六圖) × ¹ / ₂₀

體軀延長にして頭部小さく、吻は短小にして判明せず。背鰭の背部の中央に位し著く大にして鎌狀を呈す、胸鰭は狭長にして尖鋭なり、齒は其數25—37あり。

體は青色にして體側に灰白色の條斑あり、腹部白し。此種は北太平洋に棲息し、肉、皮膚及脂肪を利用すること前種に同じ。

シヤチ
Orcinus orca (Linné)
(第三圖版 第七圖) × ¹ / ₂₀

體軀強壯にして圓錐形をなす。頭部短小、背鰭は背部中央の直前にありて發達し大形なり。胸鰭は短く廣潤にして卵圓形をなす。齒式は $\frac{10-13}{10-13}$ ＝40—52なり。

體色は頭部、背部及諸鰭は總て黒色、下顎、咽喉部及腹部は白色なり、殊に眼の後方にある紡錘形の白斑各一個、其他腹部に白色斑ありて其中央に位するものは後方肛門に至り、他の二は左右體側を斜めに後上方に走るを特徴とす。

本種は世界各地の海洋に棲息し、我近海にも屢々來游す。強猛なる性質にして時に鯨類を襲ふ。海豚科中最大形にして體長9米に達す。

Physeter macrocephalus Linné
“Makko-kudira”
PL. III, fig. 1. × ¹ / ₆₀

Body large; head enormous; snout blunted, blow hole single on left side; dorsal fin represented by a series of low humps; conical teeth 40—50 in number, in lower jaw only.

Average length 14 metres, but some specimens are as larger as 23 metres. Body blackish-grey, getting grey on the snout and lower jaw. Pectoral fins not large, measuring 1 metre in a full grown whale. Caudal fin large.

Occur in every ocean, and though preferring warmer water, are to be found in great abundance off the coast of Kinkwazan, Miyagi Prefecture. The good season for hunting are the months from June to November.

It is said that the optimum water temperature for the migration of this species is 20°—22° C. Sperm whale feeds mainly upon gigantic cuttle-fish, which inhabit the deep sea.

Oil of this whale, particularly that of its head cavity, is highly prized.

Berardius bairdii Stejneger
“Tuti-kudira”
PL. III, fig. 2. × ¹ / ₄₀

Body large; head somewhat round; snout produced; teeth two on each sides of lower jaw. Dorsal fin small, situated on the posterior portion. Pectral fins also small and falcate. Blow hole median and crescentic, with a concavity forward.

It reaches a length of 9 metres. Colour greyish-black. This is a North Pacific species. In Japan, its schools are often found off the coast of Awa Province. From it is obtained the good oil which is yellowish in colour.

Globicephala scammoni Cope
“Gondo-kudira”
PL. III, fig. 3. × ¹ / ₄₀

Body elongated; head round and somewhat large; dorsal fin situated in front of the middle of back, and of large size with falcate form. Pectoral fins slender and pointed. Teeth very few in number, in both jaws in the anterior part only. Colour of skin entirely black. It attains the length of 8 metres. This species inhabits the North Pacific Ocean.

Flesh and skin are utilized as food and oils as machine oil.

Neophocaea phocaenoides (Cuvier)
“Sunameri”
PL. III, fig. 4. × ¹ / ₂₀

Body elongated; snout round, with no beak. Reaches a length of 4 metres. Characterised by the absence of dorsal fin. Pectoral fins ovate.

Formula for teeth $\frac{18}{18}$ ＝72.

Colour black, with violet spot on the upper lip and throat.

Delphinus dussumieri Blanford
“Ma-iruka”
PL. III, fig. 5. × ¹ / ₂₀

Head small; rostrum elongated, about 70 per cent of whole length of skull. Teeth small, conical, bending backwards, 56—65 in number in both jaws. Dorsal fin falcate, and situated on middle of back. Pectoral fins slender and pointed. Colour of dorsal part of body, snout, and dorsal fin entirely black, becoming white beneath. Reaches a length of 2—5 metres.

This species lives in Indian and Pacific Ocean. Large schools, pursuing the pelagic fishes, are often seen in the sounds and along the shore. The time of calving is spring. New-born young are 500 mm. long. Flesh and skin are utilized as food, and oil is esteemed as machine oil.

Lagenorhynchus obliquidens Gill
“Kama-iruka”
PL. III, fig. 6. × ¹ / ₂₀

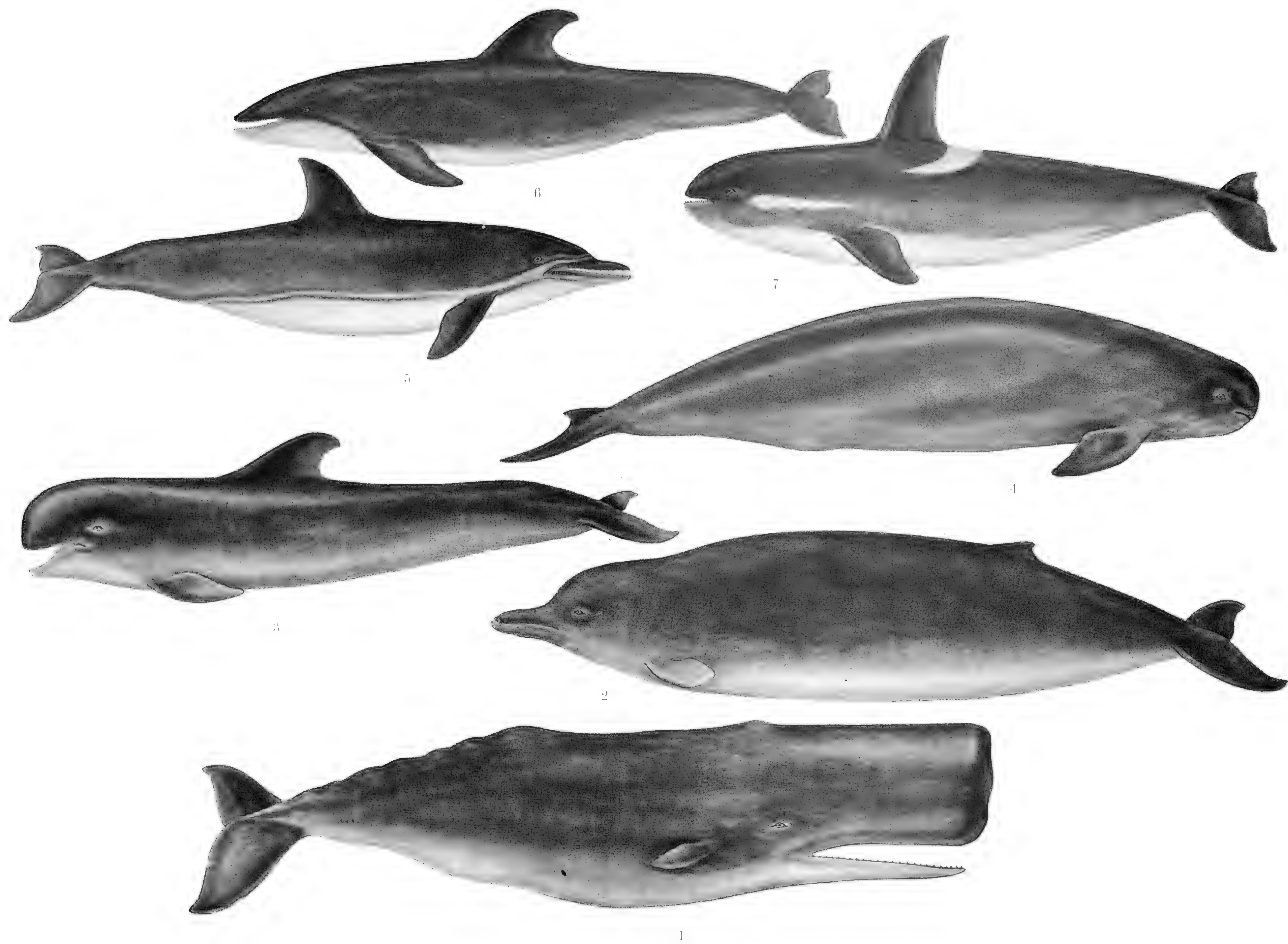
Body elongated; head small, with short, not very distinct beak. Dorsal fin large and falcate, and situated, on middle of back. Pectoral fins slender and pointed. Teeth small, 35—37 in number. Colour greyish black above, with lateral broad longitudinal stripes of white grey and dull black; white below. This is a North Pacific species of great activity. Flesh, skin, and oil are utilized same in the way as those of the former species.

Orcinus orca (Linné)
“Syati”
PL. III, fig. 7. × ¹ / ₅₀

Body robust, fusiform; head small; dorsal fin very large and falcate, situated in front of middle of back; pectoral fins short and ovate. Teeth formula $\frac{10-13}{10-13}$ ＝40—52.

Colour of head, dorsal part of body, and fins black, more or less marked with white blotches; has a fusiform white spot behind the eye; body white below.

The killer whales occur in all parts of ocean throughout the world. They are the largest among the Delphinidae, reaching a length of 9 metres. They are powerful, rapacious animals, and are the only whales that feed upon their own kind and upon large prey.





アヲウミガメ
Chelonia japonica (Thunberg)
(第四圖版 第一圖) × ¹ / ₈
<p>頭部背面は扁平大なる角板を以て覆はる。嘴は短く其縁は鋸齒状をなす。頸部は細鱗にて被覆さる。肢は扁平にして前肢に爪を有す。背甲は椎骨板5個、肋板8個、縁板25個よりなり、腹甲は扁平板13個よりなる。體色背部は暗綠色にして暗黄色の斑點を有し、腹部は黄色なり。體長1米餘に達す。主として太平洋熱帶區域に棲息し性遲鈍にして大洋を回游し、屢海濱に來り海藻を食す。二三月の候交尾し六、七月頃雌は後肢にて砂を掘り深さ數種の穴を作り、之に60個乃至100個の卵を生む。仔は三、四年にして成體となる。肉は美味にして食用に供す。脂肪は石鹼の製造其他の工業に使用せられ、甲は細工物に利用せらる。</p>

アカウミガメ
Caretta olivacea (Eschscholtz)
(第四圖版 第二圖) × ¹ / ₆
<p>頭部背面の鱗の配列アヲウミガメと異る。頸部は細鱗を以て被はれ、眼は小にして嘴は鈎状に曲る。前後兩肢の爪は幼時に於て2個なれど壯成せば一爪となる。前額鱗2對、椎骨板5對、肋板5對、縁板25個よりなる。體色背面は赤褐色腹面は黄色なり。産卵は六、七月にして一産の卵數六、七拾個なり。肉に美味あり。食用とならず。分布はアヲウミガメと略ほ同様なり。</p>

タイマイ
Eretmochelys squamosa (Girard)
(第四圖版 第三圖) × ¹ / ₅
<p>上顎は鋭く下方に彎曲し其縁は鋸齒状をなさず。頭部背面は大なる角板を以て覆はれ、頸部亦細鱗にて被はる。椎骨板は5個にして、其兩側に4對の肋甲板あり。此等の板は、魚鱗の如く覆瓦狀に配列せることは、其の著しき特徴なり。前後兩肢は何れも扁平にして、大なる鱗を以て覆はる。前肢には2爪後肢には1爪あり。背甲の色は褐黄色にして濃黑色の雲型斑紋を撒在す。腹甲は黄色にして模様なく、且背甲に比し、其厚味著しく薄し。産卵期は七、八月頃にて數回産卵す。産卵は海濱の砂地を掘りて行ふ。一回に160乃至200個の卵を産す。卵は40—50日にて孵卵化す。體長1米に達せず。甲は各種の工芸品及び装身具に製せられ價貴し。南洋委任統治領、臺灣、琉球、小笠原等に産す。</p>

オザガメ
Dermochelys schlegeli (Garman)
(第四圖版 第四圖) × ¹ / ₁₀
<p>カメ類中大なる種類にして屢2米餘に及ぶものあり。背部は角板に代るに革質の皮膚を以て覆はる。背面には7條、腹面には5條の隆起せる縦走線ありて、其後端は稍棘狀の突起に終る。體色は淡褐色或は黑色にして、腹部には不規則なる白斑を點在す。後肢及び尾部は短きも、前肢は甚だ長し。琉球、九州稀に北陸地方の沿岸に現はるゝことあるも主として大洋の熱帶部に生活す。産卵期には砂濱に來りて産卵す。甲殼類、軟體動物及び魚類は其主なる食餌とす。肉は食用とならず。</p>

スツボン
Amyda japonica (Temminck & Schlegel)
(第四圖版 第五圖) × ¹ / ₂
<p>頭部吻端は著しく尖り、外鼻孔は吻の末端に近く位し、隔膜を以て兩孔に分たる。尾は短かく、前後兩肢は3爪を有し、背甲の長さ17浬、幅13浬に達す。五、六月頃直徑2浬の球形卵を産卵し、約二ヶ月にて孵化す。肉は美味なり。本邦南部地方の湖沼河川に産す。池中に養殖せらる。</p>

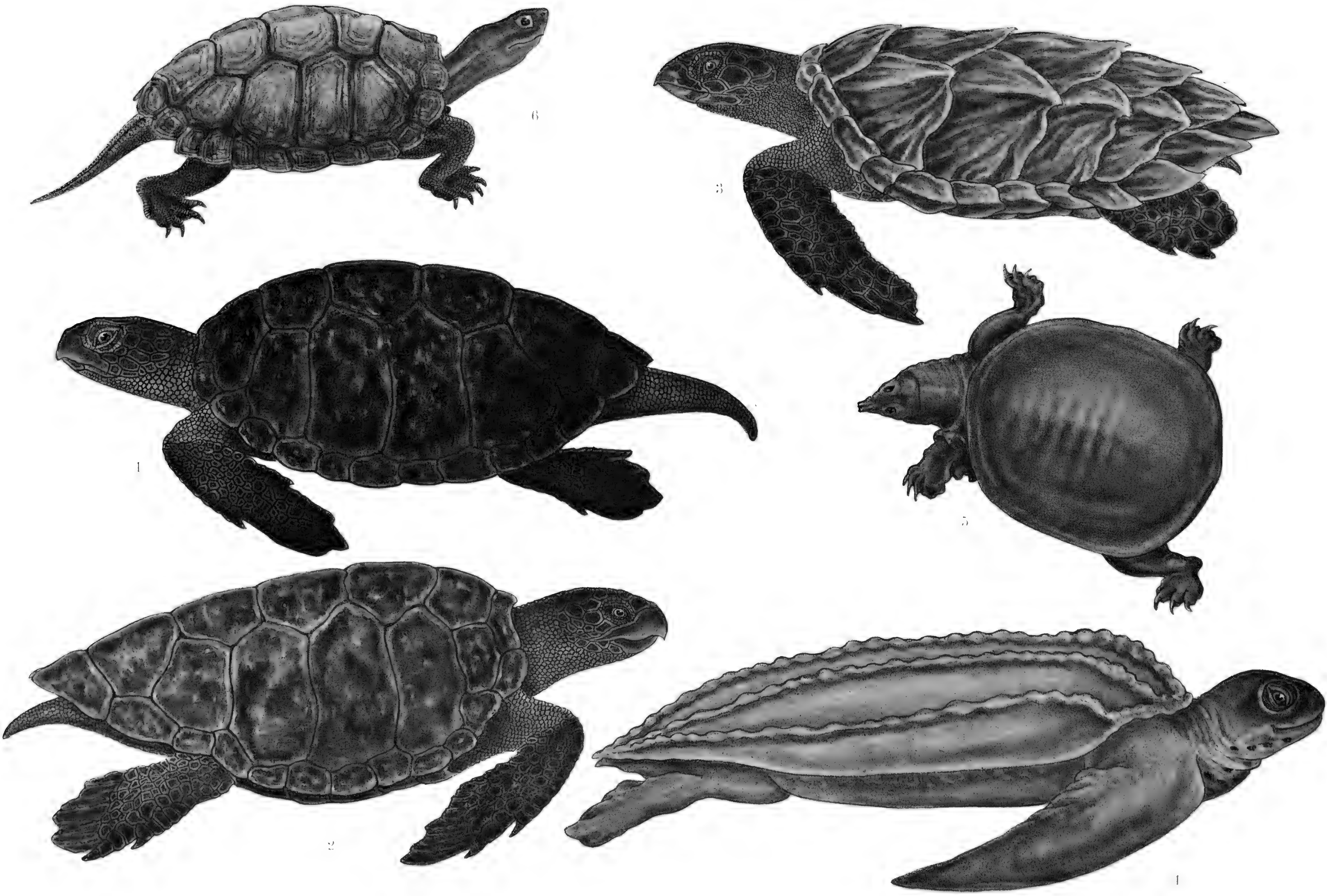
イシガメ
Clemmys japonica (Temminck & Schlegel)
(第四圖版 第六圖) × ² / ₃
<p>口は大、顎には角質の隆起ありて、齒無し。嘴の先端は鋭く、尾は長し。背甲は略ほ卵形にして中央稍隆起し、頂骨板1、髯骨板2、中央板5、中央側板8個、縁板22個よりなる。背甲は其色灰褐色なり。五月乃至六月水邊の砂中に5-6個の卵を産む。卵は圓形にして直徑2.5浬あり。背甲に絨藻類の着生せるを“ミノガメ。”と呼び、我國古來より瑞祥の兆とし貴ばる。本州、四國、九州の河川湖沼に廣く分布す。</p>

Chelonia japonica (Thunberg)
“Ao-umigame”
PL. IV, fig. 1. × ¹ / ₈
<p>Head flattened dorsally, covered with large horny plates. Beak short, and serrated on margin. Neck covered with fine scales. Limbs paddle-shaped, each anterior pair of limbs being furnished with a claw. Carapace composed of 5 vertebral, 8 costal and 25 marginal plates. Plastron consists of 13 flattened plates. Colour dark-green with dark yellowish spots on dorsal and yellowish on ventral. This species often grows a length of one metre. Breed from February or March, to June or July the female laying from sixty to one hundred eggs in a hole a few centi-metres deep, which is dug with the posterior limbs. The young take some years to mature. Inhabits mainly the tropical part of the Pacific; sluggish in disposition; natatory in the ocean, often coming to the shore; feeds on seaweeds. The flesh good for food; the fat is used as raw material in the soap-industry, and the shield in the making of fancy wares.</p>
Caretta olivacea (Eschscholtz)
“Aka-umigame”
PL IV, fig. 2. × ¹ / ₆
<p>Arrangement of scales on head different from that of Chelonia japonica. Neck covered with fine scales, eyes small, beak curved uniformly. Both anterior and posterior limbs have two claws in the immature stage, losing one of them in the adult stage. Pre-frontal scales 2 pairs, costal plates 5 pairs and marginal plates 25 in number. Colour reddish brown on dorsal and yellowish on ventral surface. Breeding season June and July. From 60 to 70 eggs are laid at a time. Flesh has unpleasant smell and is not edible. Distribution nearly equal to that of Chelonia japonica.</p>

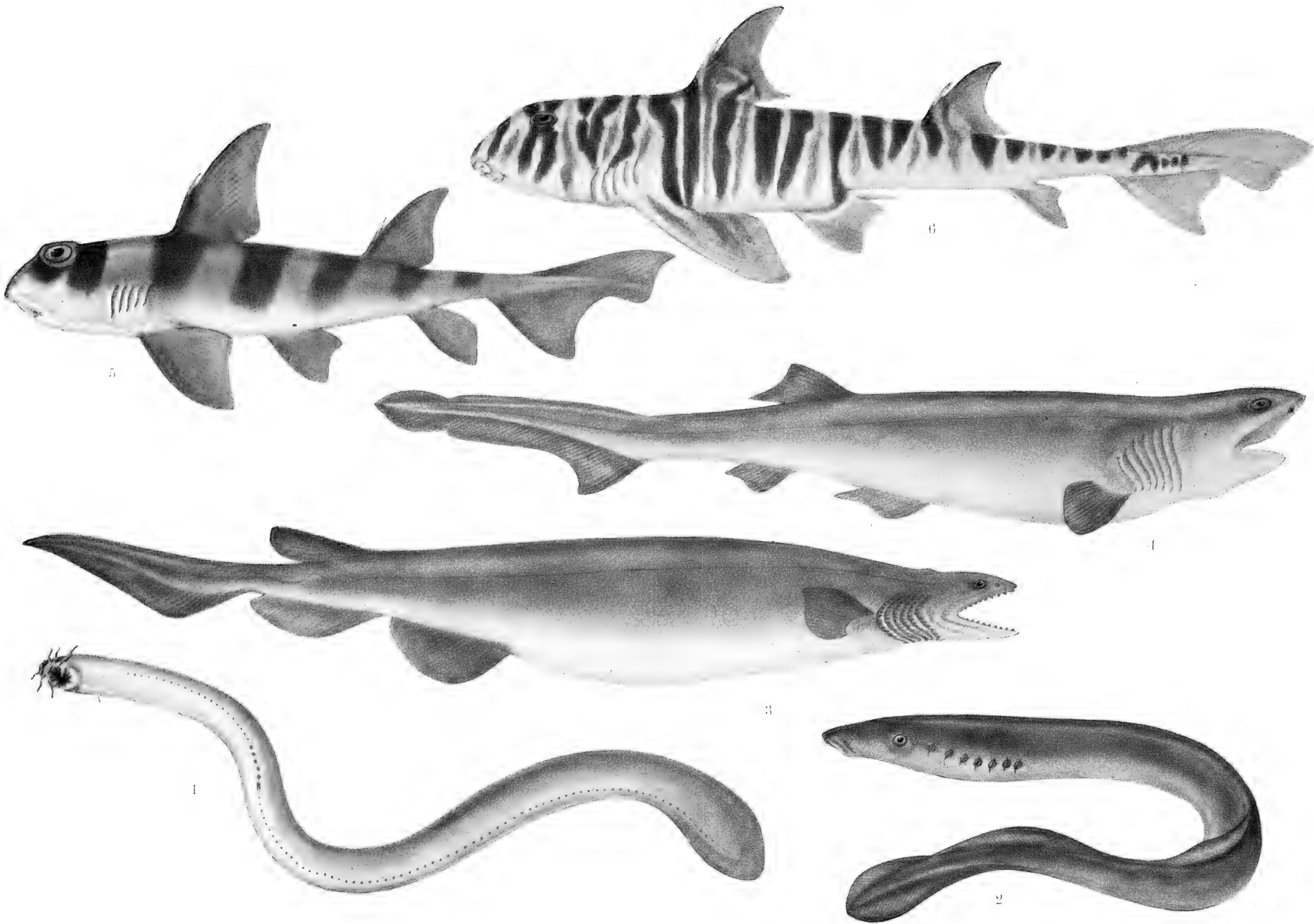
Eretmochelys squamosa (Girard)
“Taiinni”
PL. VI, fig. 3. × ¹ / ₅
<p>Upper jaw hooked sharply downward, its margin not being serrated; dorsal portion of head covered with large horny plates; neck also covered with fine scales. 4 pairs of costal plates characteristically arranged overlapping in a tile-roof-like form, similar to fish scales, on both sides of 5 vertebral plates. Limbs are flippers with large flattened scales. Anterior flippers have two claws, posterior one each. Colour of shield yellowish-brown with dark cloudy-shaped blackish blotches, that of plastron being yellowish without the blotches. Plastron remarkably thin in comparison with that of shield. Breeding season July and August, female laying, 5 or 6 times in a season, from 160 to 200 eggs at a time in a hole which she digs in sandy ground. Eggs hatch out in about forty days. Length of body when fullgrown does not attain one metre. Shield manufactured into highly valuable objects of art and into Japanese trinkets. Species distributed near Mandated Oceanic Islands under the Imperial Government, the Bonin and Ryukyu Islands and in the sea of Formosa.</p>

Dermochelys schlegeli (Garman)
“Osa-game”
PL. IV, fig. 4. × ¹ / ₁₀
<p>This is the largest species and sometimes grows to about 2 metres long, dorsal portion covered with a leather-like integument instead of a horny shield. 7 ridge-lines on dorsal and 5 ridge-lines on ventral portion of body, all running length-wise, terminating in hooked process at posterior end of body. Colour of body light-brown or black, irregular white blotches being scattered on the ventral portion. Posterior flippers and tail short; anterior very long. This species usually inhabits the ocean, going to a sandy shore only to lay its eggs. It feeds mostly on crustacea, mollusca and fish. The flesh is not edible nor used industrial purposes. It is distributed on the coasts of Kyusyu, the Ryukyu Island, but is rarely found in northern Japan.</p>
Amyda japonica (Temminck & Schlegel)
“Suppon”
PL. IV, fig. 5. × ¹ / ₂
<p>Prefrontal of head remarkably pointed. External nostrils situated at terminal end of snout, being divided into two by a separating membrane. Tail short, fore and hind limbs have 3 claws. Shape of shield round and soft with the exception of its elevated centre portion which is hard. Shield reaches 17 cm. long and 13 cm. wide. Colour dull grey on the dorsal and light yellowish on the ventral portion of body. Female lays from 30 to 60 spherical eggs 2 cm. in diameter in May and June; they hatch out in about two months. The flesh is a delicacy. This species inhabits muddy rivers and lakes in southern Japan, it is also cultured in ponds as is well-known.</p>

Clemmys japonica (Temminck & Schlegel)
“Isi-game”
PL. IV, fig. 6. × ² / ₃
<p>Mouth large, jaw covered with horny ridge instead of teeth, terminal end of snout sharp; tail long. Shield almost oval-shaped and elevated at central portion, composed of one temporal plate, 2 anal plates, 5 central plates, 8 costal plates and 22 marginal plates; its colour being grey. Female lays from 5 to 6 eggs in the sandy shores of fresh-water lakes and ponds, diameter of egg 2.5 cm. The so-called “Mino-game” is this animal whose shield with green algae attached, when seen rejoices the hearts of people, the sight of it being regarded as an auspicious sign. It is distributed in the fresh-water lakes and ponds of Sikoku, Honsyu, and Kyusyu in Japan.</p>









ホシザメ
Cynias manazo (Bleeker)
(第六圖版 第一圖) ×¹/₆

體長は頭長の 6¹/₂ 倍、體高の 11¹/₂ 倍あり。頭長は眼徑の 4³/₄ 倍、吻長の 2¹/₂ 倍なり。體は窄形にして細長く、背面は前方に於て稍昂起し、尾部は細長くなれり。頭部は縦扁し幅廣く、後方に於て昂起せり。吻は甚だ縦扁し、先端甚だ突出せり。眼は長く、側在し、口角には各 1 唇褶あり。齒は小にして鈎石狀に數列に排列す。噴水孔小さく眼の後縁近くにあり。第一背鰭は第二背鰭より大きく、腹鰭起部より胸鰭起部に近し。第二背鰭は尾鰭後端より第一背鰭の起部に近し。體色帯灰色にして下方は淡く、頭部及び軀幹の背面及び側縁に沿ひて小白點を散布す。體長 1.5 米に達す。

ドチザメ
Triakis scyllium Müller & Henle
(第六圖版 第二圖) ×¹/₆

體長は頭長の 6²/₅ 倍、體高の 8²/₅ 倍。頭長は吻長の 2¹/₂ 倍、眼徑の 6¹/₄ 倍あり。體は長く、背部昂起し尾部は細長く且縦扁せり。頭部縦扁し、眼は小さく、側邊に位し瞬膜あり。口は大きく半月形して齒は兩顎同様にして小さく、且甚だ數多く、鋭く尖りて三尖頭をなす。各口角に唇褶あり。噴水孔あるも小。第一背鰭甚だ大にして第二背鰭の起部よりも吻端に近し。體は暗灰色にして 10 條或はそれ以上の不明瞭なる幅廣き帶黑色の横帶規則正しく並べり。尙其他に體の上方には多くの不明瞭なる黑點を散在す。1.5 米に達す。南日本に多し、普通内灣に棲息するも餘り多からず。卵胎生にして一産約 20 尾なり。星鮫の如く美味ならず。

メジロザメ
Carcharias japonicus (Schlegel)
(第六圖版 第三圖) ×¹/₆

吻長は口裂より稍長し。口角に於ける凹溝は上顎及び下顎に迄延長せり。鼻孔は吻端より口に近く、兩鼻孔間の距離は兩鼻間隔部と吻端迄の距離に等し。齒は扁平にして鋸齒縁なし。腹鰭は第一背鰭の中央下に達し、其の後縁は稍凹なり。第二背鰭は小さく、其の後縁は突出し且尖がれり。臀鰭基底の長さは腹鰭より臀鰭基底に至る迄の距離の ²/₅ 倍あり。全長は尾鰭の 3¹/₂ 倍あり。體は背部淡褐色にして下方淡し。諸鰭は灰色にして淡き外縁を有す。南日本より印度洋に迄分布するも日本には餘り多産せず。

トガリヒラガシラ
Scoliodon acutus (Rüppell)
(第六圖版 第四圖) ×¹/₆

吻長は眼と鰓孔との間の距離に等し。口角に於ける凹溝は上顎に迄延長せず。兩顎齒には鋸齒縁なく、斜傾し、其基底は擴大せず。臀鰭基底の長さは腹鰭基底より臀鰭基底迄の距離の半ばに等し、胸鰭は第一背鰭起部の下方に迄延長し、其の後縁は凹入せり。第二背鰭は小さく、臀鰭の後半上部にあり。全長は尾鰭の 3¹/₂ 倍乃至 3²/₅ 倍あり。體色背部は灰色にして下方白く、尾鰭の上縁及び下葉の下縁は黒し。南日本より印度に迄分布す。

ヨシキリザメ
Prionace glauca (Linné)
(第六圖版 第五圖) ×¹/₆ (第六圖) ×¹/₄

體長は頭長の 5¹/₂ 倍、體高の 4 倍なり。頭長は吻長の 1⁷/₁₀ 倍、眼徑の 5⁷/₁₀ 倍に相當す。體及び頭部は細長く、稍紡錘形を呈せり。吻は甚だ長く且尖れり。口は半月形にして口角には小さき 1 溝あるのみにて、唇褶を缺く。下顎齒は上顎齒より幅狹く、兩顎齒は共に成魚にありては著しく鋸齒をなすも、上顎齒は稍傾斜せり。第一背鰭は大きく、胸鰭基底の中部と腹鰭との中央部に始まる。第二背鰭は甚だ小さく、臀鰭より稍小なり。胸鰭は大にして鎌狀を呈せり。卵胎生にして、一産 60 尾に達す。體は帶黑青色にして腹面淡し。6 米或は其れ以上に達す。南日本には極めて普通の種類にして、東京市場に終年之を見る。鰭鰭は鮫類中最上等にして、肉は多く半片に製せらる。肉に稍臭氣あり。

メジロザメ
Carcharias japonicus (Schlegel)
(第六圖版 第五圖) ×¹/₆

體長は頭長の 5¹/₆ 倍、體高の 7 倍に達す。頭長は吻長の 2³/₅ 倍、眼徑の 1⁵/₆ 倍あり。體は稍細長く、頭部甚だ幅廣く、且縦扁せり。吻は稍短く、多少凹く尖れり。兩顎齒の縁邊は鋸齒をなすも、幼魚にはなし。上顎齒は下顎齒より幅廣く、側扁す。下顎齒は上顎齒より長けれども幅狹し。噴水孔なし。第一背鰭は吻端と第二背鰭の起部と中間に存す。第二背鰭は小さく、低く、尾鰭先端より第一背鰭の起部に近し。臀鰭は小さく、胸鰭は鎌狀を呈す。尾柄の背側には尾鰭との境に深き 1 凹窪あり。體色背部は青褐色にして、腹面は白し、胎生にして一産約 18 尾なり。體長 5 米に達す。此の種類は日本に極めて普通の種類にして、殊に南日本より印度洋に至るまで産す。肉は稍美味なり。

Cynias manazo (Bleeker)
“Hosizame”
PL. VI, fig. 1. ×¹/₆

Length of body equal to 6¹/₂ times that of head and 11¹/₂ times that of its depth; length of head 4³/₄ times that of eye and 2¹/₂ times that of snout. Body slender, with somewhat elevated back in front; tail long and tapering. Head depressed and broad, elevated behind; snout strongly depressed, and greatly produced. Eye elongated, and lateral; mouth obtusely angular with fold on each side; teeth small, and arranged pavement-like in many rows. Spiracles small, very near posterior margin of eye. First dorsal larger than second, nearer to origin of pectoral than to that of ventral; origin of second dorsal nearer to that of first dorsal than to tip of caudal. Colour greyish-blue, paler below upper surface of head and body, also along lateral line marked with small, round, white spots. Greatest length 1.5 metres. This species is very abundant in the shallow bays of southern Japan. Its flesh as food is superior to that of the other sharks of Japan. Viviparous, giving birth to young in the spring.

Triakis scyllium Müller & Henle
“Dotizame”
PL. VI, fig. 2. ×¹/₆

Length of body equal to 6²/₅ times that of head and 8²/₅ times that of its depth; length of head 2¹/₂ times that of snout and 6¹/₄ times that of eye. Body elongated, with elevated back the tail being slender and compressed. Head depressed, eye small, lateral, with nictitating membrane; mouth large and crescent-shaped; teeth sub-equal in both jaws small, numerous, sharply pointed, and tricuspid; labial fold at corner on each side. Spiracle present, but very small. First dorsal large and a little nearer to origin of second dorsal than to tip of snout. Body dark greyish-brown, with ten or more indistinct broad blackish cross bands, and in the upper part there are a number of scattered indistinctly defined, blackish spots. Greatest length 1.5 metres or a little more. It is found in the estuarine waters of southern Japan, but is not very common. Viviparous, young about 20 in a litter. It is not so tasty as Cynias manazo (Bleeker).

Scoliodon walbeehmi (Bleeker)
“Hiragasira”
PL. VI, fig. 3. ×¹/₆

Length of snout exceeds width of mouth by nearly ¹/₃. A remarkable groove at corner of mouth extends on to upper jaw and along a portion of mandible. Nostrils rather nearer to mouth than to end of snout, the distance between their outer edges being equal in extent to that between them and end of snout. Teeth flat, without serration. Pectoral fins extend to nearly beneath middle of first dorsal fin, its posterior edge being somewhat concave; second dorsal fin, situated over last half of anal fin, rather small, its posterior lobe being elongated and pointed. Length of base of anal equal to ²/₅ of its distance from base of ventral; total length of fish is equal to 3¹/₂ times that of caudal fin.

Colour light-brown above, paler below; fins grey and mostly with lighter outer edges. Occurs in southern Japan, its range extending to the Indian Seas. Not found abundantly in Japan.

Scoliodon acutus (Rüppell)
“Togari-hiragasira”
PL. VI, fig. 4. ×¹/₆

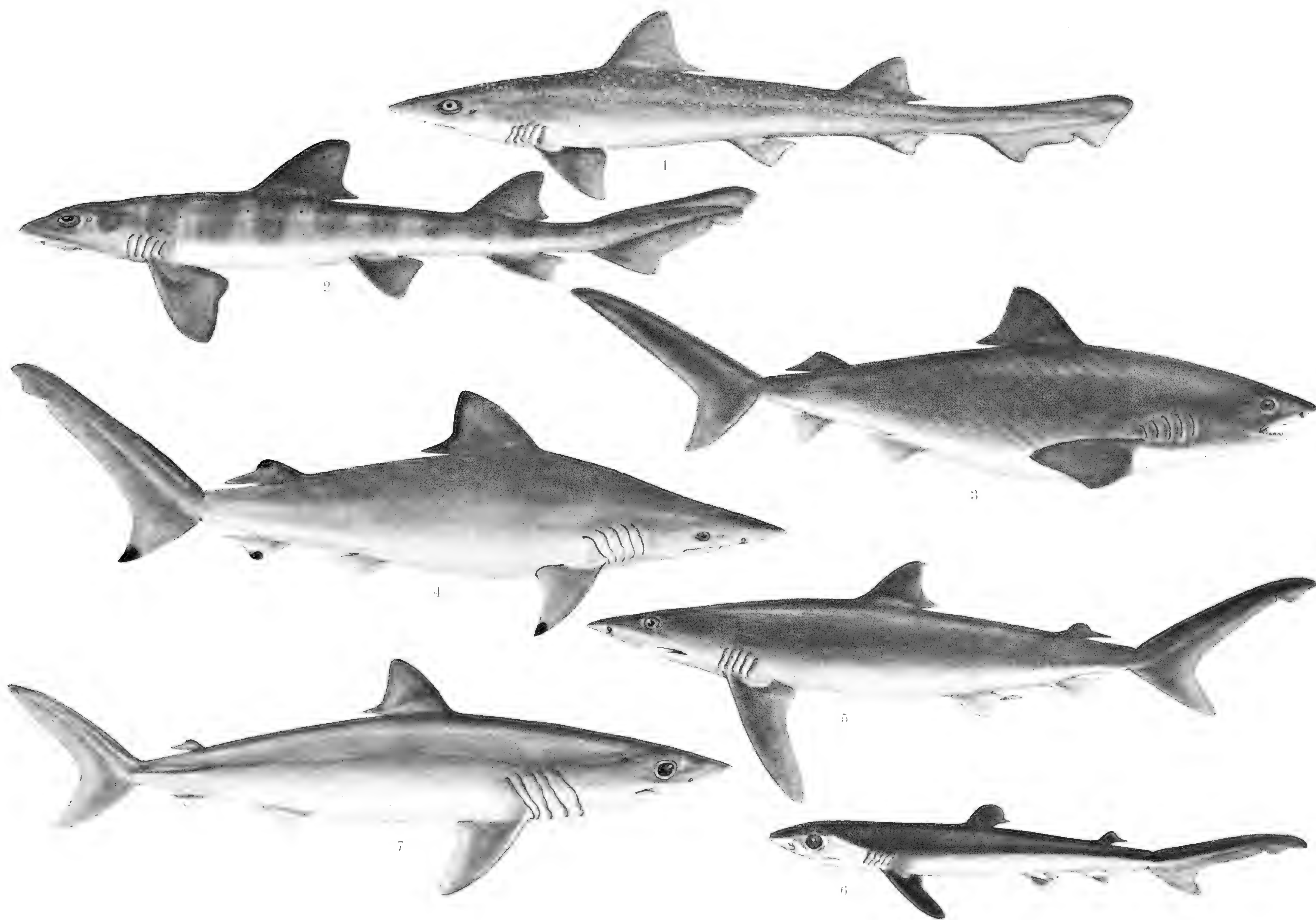
Length of snout ¹/₄ longer than gape of mouth and somewhat equal to distance between eye and first gill-opening. Groove at angle of mouth does not extend on to upper jaw. Teeth on both jaws without serration, oblique, and without swollen base. Length of base of anal fin one half its distance from ventral, or a little less; pectoral fin extends to below origin of first dorsal fin, its posterior margin being concave; second dorsal fin small and situated over posterior half of anal fin. Total length equal to 3¹/₂ to 3²/₅ times that of caudal fin. Colour is grey above, white below; upper edge of caudal and its posterior lobe dark. Found in Southern Japan, its range extending to India.

Prionace glauca (Linné)
“Yoshikirizame”
PL. VI, Fig. 5, ×¹/₆ fig. 6. (Young) ×¹/₄

Length of body equal to 5¹/₂ times that of head, and 4 times that of its depth; length of head 1⁷/₁₀ times that of snout and 5⁷/₁₀ times that of eye. Body and head slender and spindle-shaped; snout very long and pointed. Mouth crescent-shaped, without any labial fold except a groove at the angle; lower teeth narrower than upper teeth, teeth in both jaws strongly serrated in adult, those of upper jaw oblique. Spiracle absent. First dorsal large, inserted midway between the axle of pectorals and ventrals; second dorsal fin much smaller, and somewhat smaller than small anal fin; pectoral fin long, and falciform. Viviparous, bringing forth about 60 young at a birth. Colour blackish blue above, paler below. Maximum length 6 metres or more; very common in the waters of Japan.

Carcharias japonicus (Temminck & Schlegel)
“Mezirozame”
PL. VI, fig. 7. ×¹/₆

Length of body equal to 5¹/₆ times that of head and 7 times that of its depth. Body somewhat elongated; head very broad and depressed; snout rather short, somewhat broadly rounded. Teeth in both jaws finely serrated, but entire in the young, those of upper jaw rather broad, and compressed; those in lower jaw more elongated and narrower than those in upper. No spiracles. First dorsal about midway between tips of snout and origin of second dorsal; second dorsal small, low, much nearer to origin of first dorsal than to tips of caudal fin; anal small; pectoral falcate. Caudal peduncle above with deep pit at caudal. Colour bluish-grey above, white below. Viviparous, bringing forth about 18 young at a birth. Maximum length 2 metres or a little more. This species is common throughout Japan, extending its range to the Indian Seas.





オナガザメ

Alopias vulpes (Gmelin)

(第七圖版 第一圖) ×¹/₁₂

體長は頭長の4¹/₂倍、體高の4²/₅倍なり。頭長は吻長の2²/₅倍、眼徑の7倍に相當す。體は紡錘形にして、第一背鰭より前方は稍肥厚せり。頭部甚だ小にして鈍く尖り、口は半月形にして、兩顎齒は同様に平たく、三角形にして鋸齒をなさず、眼に瞬膜なし。噴水孔小にして眼の直後にあり。第一背鰭は高く、三角形にして、第二背鰭甚だ小さく、臀鰭又小にして第二背鰭後下方部にあり。胸鰭長く、鎌狀をなす。尾鰭は體長に等し。體色背部は帯黒青色にして下方白く、不明なる帯青斑點を有す。體長6.5米に達す。本種は南日本の暖海に多し。胎生にして、初夏の候一産に大抵2尾を生む。肉は蒲鉾材料として相當良質なり。

シュモクザメ

Sphyrna zygaena (Linné)

(第七圖版 第二圖) ×¹/₁₀

體長は頭長の4²/₅倍、體高の5倍なり。頭長は眼徑の6倍に相當す。頭は樞木狀にして其の幅は長さの2倍あり。樞木狀をなせる部分の後縁の長さは側縁に於ける樞木の幅に等し。樞木の前縁及び後縁は殆ど平行せり。眼は樞木の外側にあり。鼻孔は前縁にありて眼に接近し、良く發達せる凹溝を形成し、其の溝は頭部の前縁を走れり。口は半月形にして樞木の下面にあり。兩顎齒同様にして、斜傾し、各齒は其基底附近の外縁に一缺刻あり。噴水孔なし。第一背鰭は大きく、第二背鰭は全く小にして臀鰭よりも小なり。胸鰭は稍大なり、尾鰭の基底に一凹窪あり。尾鰭には尖端近くに一缺刻あり。體色褐灰色。甚だ狂暴なる鯨にして、體長3米に達す、暖海の外洋に多し。

ウバザメ

Cetorhinus maximus (Gunner)

(第七圖版 第三圖) ×¹/₅₀

體長は頭長の4¹/₂倍、體高の4³/₅倍なり。頭長は吻長の4倍、眼徑の10¹/₂倍に相當す。體形稍紡錘形にして、頭小かく、吻は鈍く尖り、眼は甚だ小にして瞬膜なし。噴水孔甚だ小さく口角の上方にあり。齒は甚だ小形にして、圓錐形を呈し、側突起及び鋸齒縁を有せず。兩顎共に6或は7列の齒を有し、各列には約200本の齒あり。鰓孔著しく大にして、背面より喉部の中央線近くに至る迄延長せり。鰓弓には長き、薄き、幅廣き皮褶あり。各鰓弓は弾力性の齒質よりなる。第一背鰭は大きく三角形にして胸鰭及び腹鰭の中央部にあり。第二背鰭及び臀鰭は甚だ小さく、胸鰭は大にして、尾鰭は尖端近くに一缺刻あり。尾柄に凹窪及び隆起線あり。12米に達す。北極洋に多く北日本に時々發見さる。専ら浮游性動物を食餌とす。此の鯨の Basking shark と呼ばるゝは甚だ運動不活潑なるが爲なり。

ツノザメ

Squalus mitsukurii Jordan & Snyder

(第七圖版 第四圖) ×¹/₅

體長は頭長の4³/₅倍、頭長は頭幅の1¹/₅倍、吻長の2²/₅倍、眼隔は眼徑の2²/₅倍あり。體は稍延長し、頭

幅廣く縦扁し、背面平坦なり。吻は上方より見れば三角形をなす。口は甚だ幅廣く、口角に深き一唇褶あり。齒は兩顎同様にして亞四角形を呈し、各齒は殆ど水平なる斜切縁ありて、尖端は外方に向へり。鰓孔全部は胸鰭基底の前方にあり。噴水孔は幅廣く、眼の直後にあり。背鰭棘強く、凹溝なし。第一背鰭起部は第二背鰭先端より稍吻端に近し。尾鰭は幅廣し。尾柄は長く尾鰭基底上方に一凹窪あり。臀鰭を欠く。背面は青褐色、腹面は白し。1米に達す。北海道より臺灣に迄分布するも「アブラツノザメ」*Squalus suckleyi* (Girard) の如く饒産せず。

ヒゲツノザメ

Cirrhitigaleus barbifer Tanaka.

(第七圖版 第五圖) ×¹/₆

體長は頭長の4²/₅倍、體高の5²/₅倍なり。頭長は眼徑の5倍、吻長の3倍なり。體の横斷面は稍三角形にして、太く、後方に向ひ漸次細くなれり。體高は第一背鰭の前方に於て最も高し。頭大きく、平く、眼に瞬膜なし、噴水孔は眼の直後にありて半月形を呈せり。吻は短く、尖り、口は稍彎曲し、上顎には明かに唇褶を存すれども短し。齒は兩顎略々等しく、斜に外方に向ひ、外方より見れば2列あり。中央齒なし。各鼻孔の内縁より長き1本の鬚を生ぜり。鰓孔は全部胸鰭の前方にあり。兩背鰭は共に前縁に一頸棘あり。第一背鰭起部は腹鰭よりも胸鰭に近く、第二背鰭は腹鰭と尾鰭基底との中央にあり。臀鰭なし。尾鰭には缺刻なく、尾柄には凹窪或は隆起線なし。體色背部は帶褐青色にして、腹面白し。1.5米に達す。南日本に産すれども少し。

アオザメ

Isuropsis glauca (Müller & Henle)

(第七圖版 第六圖) ×¹/₁₂

體長は頭長の2¹/₅倍、體高の4⁷/₁₀倍なり。頭長は吻長の3¹/₂倍、眼徑の10²/₅倍に相當す。體は紡錘形にして、吻は突出し、先端尖れり。齒は4列にして長く、基底板よりの側突起なし。噴水孔甚だ小なり。第一背鰭は胸鰭及び臀鰭の兩起部の中央より始まる。第二背鰭、臀鰭及び腹鰭は甚だ小なり。體色背部は暗青色にして下方淡し。體長7米に達す。南日本に多く、長崎にては極めて普通の種類なり。胎生。大洋性にして分布廣し。

ネヅミザメ

Lamna nasus (Bonnaterre)

(第七圖版 第七圖) ×¹/₁₀

體長は頭長の4⁷/₁₀倍、體高の4倍なり。頭は吻長の3²/₅倍、眼徑の7倍に相當す。體は短く、強大にして前方肥厚し、尾部近くに從ひ狭くなれり。尾部兩側には著しき縦走隆起線あり。吻は圓錐形にして尖る。口は幅廣く、齒は大きく、各齒の基底には1或は2本の側突起あり。上顎には左側に12本、右側に14本、下顎には左側に10本、右側に14本の齒ありて、上顎の各側に於ける第三番目の齒は小なり。鰓孔甚だ大にして噴水孔は小なり。第一背鰭は胸鰭基底の中央上より始まる。胸鰭は鎌狀を呈す。第二背鰭及び背鰭は甚だ小にして殆ど相對せり。體色青褐色にして腹面淡灰褐色の斑點を散布す。狂暴なる大形の鯨にして3米に達す。北大西洋及び北大平洋に産し、我國北部に産すれども餘り多からず。胎生にして一産2尾より5尾を生む。

Alopias vulpes (Gmelin)

“Onagazame”

PL. VII, fig. 1. ×¹/₁₂

Length of body equal to 5¹/₂ times that of head and 4²/₅ times that of depth of body; length of head 2²/₅ times that of snout and 7 times that of eye.

Body fusiform, thickest before first dorsal fin. Head very short, bluntly conical; mouth crescent-shaped; teeth equal in both jaws, flat, triangular, and without serrations. Eye without nictitating membrane; spiracle very small, just behind eye. First dorsal high, triangular; second dorsal very small; anal small, placed behind second dorsal; pectoral long, falcate; caudal nearly as long as body.

Body blackish-blue above, white below, marked with dark bluish spots. Length 6.5 metres. This species abundant in all warm seas, being common all along southern coast of Japan. Viviparous, almost regularly bringing forth 2 young at a birth. Period of reproduction lasts from spring to early summer. Its flesh as food is considered a table delicacy in Japan.

Sphyrna zygaena (Linné)

“Syumokuzame”

PL. VII, fig. 2. ×¹/₁₀

Length of body equal to 4³/₅ times that of head and 5 times that of depth of body; length of head 6 times that of eye.

Head hammer-shaped its width being about twice its length; length of hinder margin of the “hammer” nearly equal to width of near eye; anterior and posterior outlines of hammer nearly parallel. Eyes receded at the lateral extremities of “hammer”; nostril being anterior and close to eye and with a well-developed groove which runs along nearly whole front margin of head. Mouth crescent-shaped under “hammer”; teeth of both jaws similar, oblique, each with a notch on the outside near base. Spiracle absent. First dorsal large, second dorsal quite smaller than anal fin; pectoral rather large; pit at root of caudal fin, which has a single notch towards its tip. Colour brownish-grey. A large voracious shark, found in all warm seas, reaching a length of 5 metres.

Cetorhinus maximus (Gunner)

“Ubazame”

PL. VII, fig. 3. ×¹/₅₀

Length of body equal to 4¹/₂ times that of head and 4³/₅ times that of depth of body; length of head 4 times that of snout and 10¹/₂ times that of eye.

Body somewhat fusiform; head small; snout bluntly pointed; eye very small, without nictitating membrane; spiracle very small, above corners of mouth. Teeth very small, conical and without cusps or serratures, arranged in 6 or 7 rows in each jaw, about 200 in number in each row. Gill openings extremely wide, extending from back nearly to middle line of throat; branchial arches provided with a broad fringe of long and thin gill rakers. First dorsal large, triangular, over space between pectorals and ventrals, second dorsal and anal fins very small; pectorals long, caudal fin with a notch near tip; a pit on caudal peduncle; a keel at the each side of tail. Largest shark, reaches a length of nearly 12 metres. Found in the Arctic Seas and occasionally off northern Japan. Lives on weak, tiny floating organisms known as planktons. These sharks are called Basking sharks from their habit of remaining motionless on the surface of the sea.

Squalus mitsukurii Jordan & Snyder

“Tunozame”

PL. VII, fig. 4. ×¹/₅

Length of body equal to 4³/₅ times that of head, head 1¹/₅ times that of width of head and 2²/₅ times that of snout; length of interorbital space 2²/₅ times that of eye.

Body moderately elongated; head broad, depressed, flattened above; snout angular when viewed from above. Mouth very broad, a deep labial fold at each corner; teeth alike in both jaws, subquadrate, each with a nearly horizontal oblique cutting edge and a point directed outwards. Gill openings in front of base of pectorals. Spiracle rather wide, just behind eye. Dorsal spines strong, not grooved; origin of first dorsal spine a trifle nearer to top of snout than to that of second dorsal; caudal broad; caudal peduncle rather long, with a pit at caudal base above. Anal fin wanting. Colour blue-brown above, white below. Length one metre. Found off coasts of Japan, generally common from Hokkaido and as far southward as Formosa; not so abundant as *Squalus suckleyi* (Girard).

Cirrhitigaleus barbifer Tanaka

“Hige-tuno-zame”

PL. VII, fig. 5. ×¹/₆

Length of body equal to 4¹/₅ times that of head and 5²/₅ times that of depth of body; length of head about 5 times that of eye, and 3 times that of snout.

Body somewhat trihedral, robust, gradually tapering behind, deepest part being in region of first dorsal fin. Head large, and flattish; eye without nictitating membrane; spiracle present, directly behind eye, crescent-shaped; snout short, and pointed; mouth a little arched; labial fold on upper jaw distinct but short; teeth in both jaws sub-equal, directed obliquely outwards, two rows visible from outside, one median tooth; a long nasal cirrus from inner edge of each nostril; gill-openings entirely in front of pectoral. Dorsals two, each with a strong spine in front; first dorsal inserted nearer to pectoral than to ventral; second dorsal equi-distant from ventral and root of caudal; anal fin absent; caudal fin without a notch; no pit or keel on tail. Colour brownish-blue above, white below. Length 1.5 metres. Found in southern Japan, but not common.

Isuropsis glauca (Müller & Henle)

“Aozame”

PL. VII, fig. 6. ×¹/₁₂

Length of body equal to 2¹/₅ times that of head and 4⁹/₁₀ times that of depth of body; length of head 3¹/₂ times that of snout and 10²/₅ times that of eye.

Body fusiform, much like that of the tunny; snout longitudinally produced and pointed at tip; teeth in four rows very long and flexuous, without basal cusps. Spiracle very small. First dorsal fin inserted between pectoral and ventral; second dorsal, anal and ventrals very small. Back and upper half of body are of a dark blue, white below. This shark attains a length of 7 metres, abundant on the coast of Japan and to the southward. Viviparous. The fish of this species are oceanic dwellers of wide distribution.

Lamna nasus (Bonnaterre)

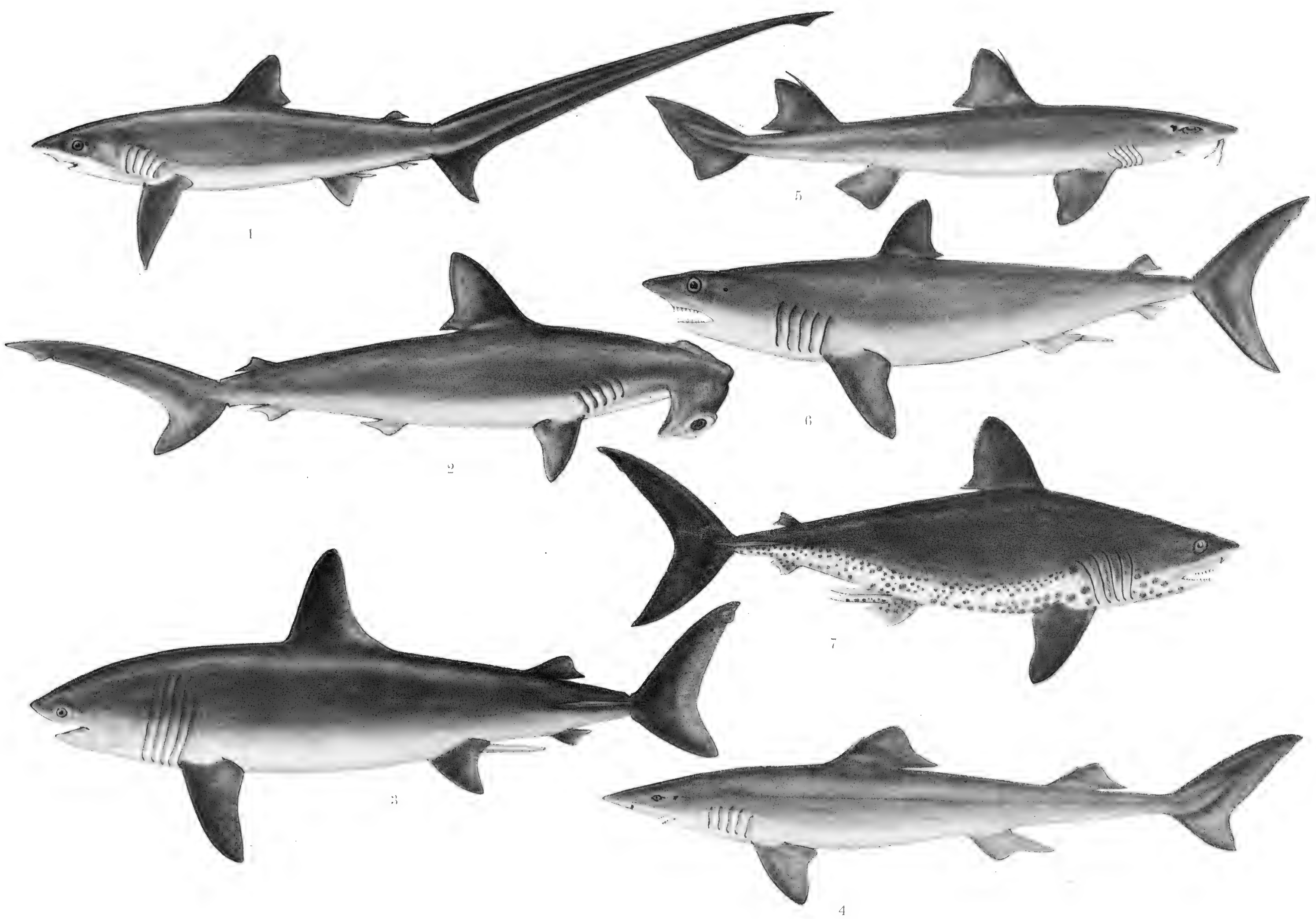
“Nezumizame”

PL. VII, fig. 7. ×¹/₁₂

Length of body equal to 4¹/₁₀ times that of head and 4 times that of depth of body; length of head 3²/₅ times that of snout and 7 times that of eye.

Body short thick and high in front, becoming narrower near tail, on sides of which there is a prominent longitudinal keel; snout conical, pointed; mouth wide; teeth large, $\frac{12-14}{10-14}$, each tooth

with one or two basal cusps. Gill openings very wide and spiracle minute. First dorsal fin begins over the axile of pectoral; pectoral fin falcate; second dorsal and anal fins very small, nearly opposite each other. Colour bluish-grey. A large and fierce pelagic shark reaching a length of 3 metres. Frequents North Atlantic and North Pacific; not common in northern Japan. The “por-beagle,” as the species is commonly called is viviparous, bringing forth four or five young at a birth.





ノコギリサメ
Pristiophorus japonicus Günther
（第八圖版 第一圖） ×¹/₆

體長は頭長の約3倍、吻端より眼までの距離の3³/₄倍あり。頭長は頭幅の4²/₃倍、眼隔の8²/₅倍あり。體は延長し、吻は長き、平らたき葉狀に延長し、其の兩側には鋸齒狀の鋭き齒を列生せり。吻の中央下面より1對の長き觸鬚を出だせり。口は眼の後方下面にありて、兩顎齒は小さく、尖り多くの列をなして並列せり。噴水孔甚だ大なり、第一背鰭の起部は吻端より尾鰭の尖端に近く、又第二背鰭より腹鰭の起部に近し。尾部に於ける側隆起は長く、腹鰭の側方より尾鰭基底の前方に迄延長せり。體は淡灰褐色にして腹部白し。1.5米に達す。日本沿岸一帯に産すれども南日本に特に多し。甚だ美味なり。

カスサメ
Squatina japonica Bleeker
（第八圖版 第二圖） ×¹/₆

體長は頭長の5倍、頭長は兩噴水孔間の距離の1⁷/₅倍、兩眼間隔の2¹/₄倍あり。體は甚だ幅廣く、縦扁し、幅廣し。體長は體盤の幅の1⁵/₃倍に等し。頭部は又甚だ幅廣く、且平たし。兩顎には3列の鋭く尖がれる齒を有す。體側背面は著しく粗雜なり。噴水孔は眼より遙に離る。兩背鰭は甚だ小にして第一背鰭は胸鰭後端の直後に始まる。胸鰭は甚だ長く、水平に擴張し、其の外角は直角より稍大にして其の基底は前方に延長し、鰭類の如き平らたき體形を形成せり。然れども其の基底は前方に於て深き一缺裂により頸部と離れ、其直前の頭側に幅廣き鰓孔を有す。此の種類は鰓孔が頭側にある事及び胸鰭基底が頭側と適合せざる點に於て鰭類に包含されず。背面は褐色にして多くの小黑點あり。體長2米に達す。南日本に多し。晩春より初夏に亘り約20尾を胎生す。

コロサメ
Squatina nebulosa Regan
（第八圖版 第三圖） ×¹/₆

本種は「カスザメ」に酷似すれども本種に於ては胸鰭

の外角は直角より遙かに大なる事、及び噴水孔は眼に甚だ接近し、眼と噴水孔との距離は眼徑より小なる等の諸點に於て區別し得。體は背部淡褐色にして多くの黑色及び白色の斑點を散布す。

サカタサメ
Rhinobatus schlegeli Müller & Henle
（第八圖版 第四圖） ×¹/₆

體長は吻端と噴水孔との間の距離の4³/₄倍、體盤の幅の3²/₅倍あり。吻長は鼻孔間の距離の7倍、眼徑の7倍あり。體は延長し、著しく縦扁せり。頭部及び體盤は大いに側方に擴張し、吻は突出して幅狭き鋭き一點に終れり。齒は小さく、鋸石狀に並列す。噴水孔は大きく、總裂は小にして腹面にあり。背鰭は大きく、第一背鰭は腹鰭起部より第二背鰭に近し。胸鰭幅廣く、其の最も幅廣き部分は體盤の中央よりも前方にあり。尾鰭幅廣く、縦扁せり。尾部各側には各1條の著しき隆起縁あり。體色背面は赤褐色にして腹面淡し。1米に達す。南日本に多く、晩春の似胎兒を産む。甚だ美味なり。

トンガリ
Rhynchobatus djiddensis (Forskål)
（第八圖版 第五圖） ×¹/₆

吻は著しく突出し、其の先端尖がれり。口と吻端との距離は體長の¹/₄或は¹/₅に等し。體盤は後方幅廣く、其の幅は其長さの³/₄に等し。噴水孔は眼の後部に甚だ接近せり。第一背鰭は腹鰭と對在す。これ「サカタサメ」と異れる著しき點なり。尾部各側に於ける隆起縁は腹鰭後端の稍上方より始まり後方に走れり。體は背部灰色にして白點を有す。胸鰭基底に一黑點あり。

Pristiophorus japonicus Günther
“Nokogirizame”
PL. VIII, fig. 1. ×¹/₆

Length of body about equal to 3 times that of head, and 3³/₄ times the length from tip of snout to eye; length of head 4²/₃ times that of its greatest width, and 8²/₅ times that of inter-orbital space. Body elongated, snout produced in a long, flat blade, with sharp, saw-like teeth on each side; a pair of barbels below snout. Mouth situated below and behind eye, teeth small, pointed and arranged in many rows in jaws. Spiracle very large. Origin of first dorsal fin nearer to tip of caudal fin than to tip of snout, and nearer to origin of ventral than to second dorsal fin. A lateral keel lies along each side of tail from ventral fins of caudal.

Colour pale grey-brown above and white below. This species attains a length of 1.5 metres. It frequents the coasts of Japan throughout, being especially abundant in southern regions. Its flesh is considered a table delicacy.

Squatina japonica Bleeker
“Kasurame”
PL. VIII, fig. 2. ×¹/₆

Length of body equal to 5 times that of head; length of head 1⁷/₅ times that of space between spiracles and 2¹/₄ times width of inter-orbital space. Body very broad and flattened, its length being equal to 1⁵/₃ times of width of disc. Head also very broad and flattened. Jaws with about three rows of sharp and pointed teeth.

Dorsal side of body very rough, especially so along edges of dorsal and caudal. Spiracle very distant from eye. Both dorsal fins very small, first dorsal just behind tips of ventral fins; pectoral fins very large, expanded horizontally, their outer angles being a little greater than a right angle, and their bases, extended forward, giving body form of a flattened disc of rays; the anterior extension being separated from neck by a notch, in which the gill openings are situated on lateral side of body. Colour brown above, marked with very numerous, small, dark spots. This fish attains a length of 2 metres. Found in Southern Japan. This species is viviparous, bringing forth about twenty young at a birth in the later spring or summer.

Squatina nebulosa Regan
“Korozame”
PL. VIII, fig. 3. ×¹/₆

This species closely allied to *S. japonica* Bleeker, but differs from it in shape of pectoral fin, outer angle of this being a greatly obtuse angle, and spiracle being situated very close to eye. Body pale brown above, very profusely sprinkled with small black and white spots.

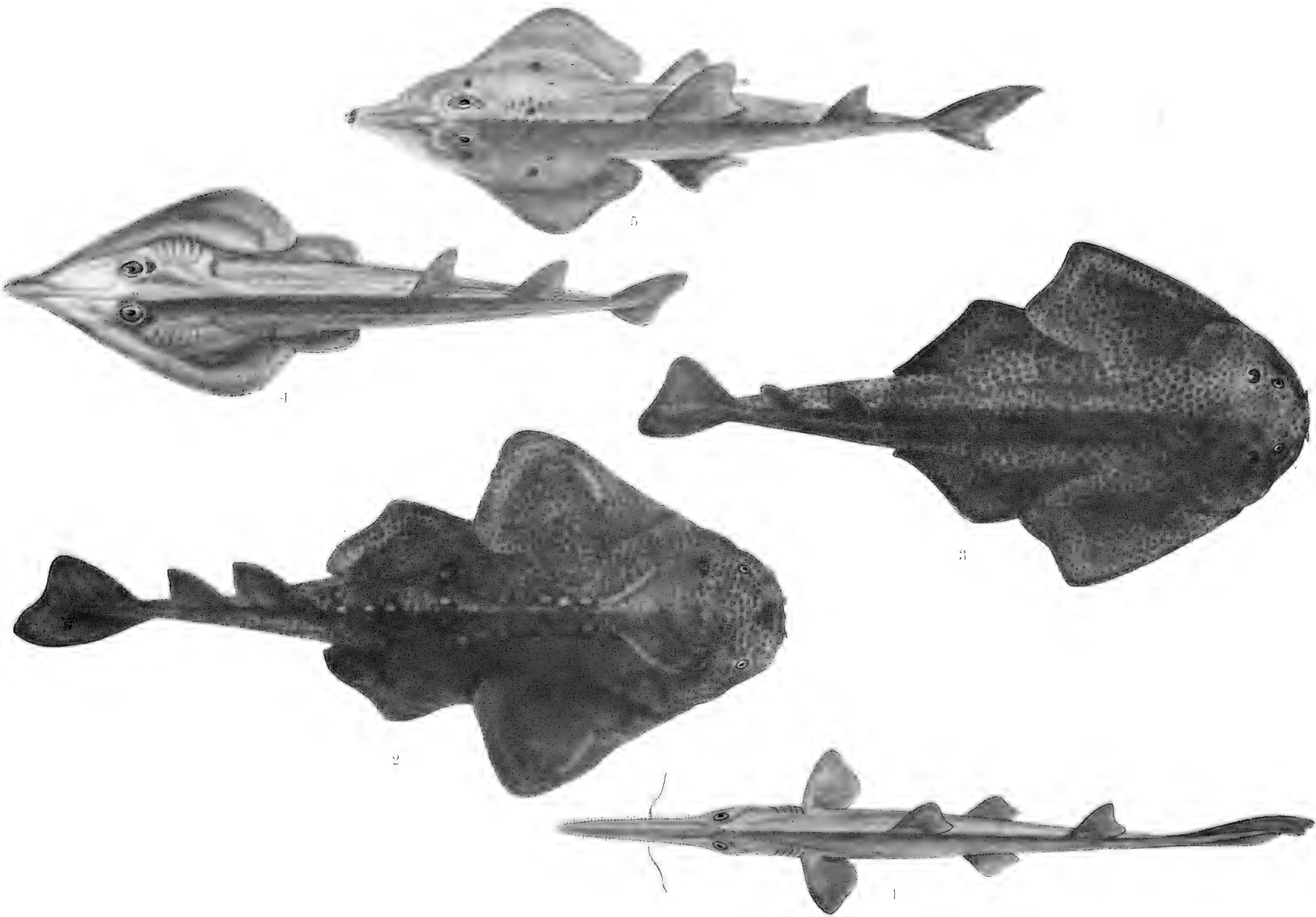
Rhinobatus schlegeli Müller & Henle
“Sakatazame”
PL. VIII, fig. 4. ×¹/₆

Length of body equal to 4³/₄ times distance from tip of snout to spiracle and 3²/₅ times of width of disc; length of snout 7 times width of space between nostrils, and 7 times diameter of eye.

Body elongated and greatly depressed. Head and disc greatly expanded; snout produced, terminating in a sharp narrow point. Teeth small and paved. Spiracles large; gill openings small and ventral. Dorsal fins large; first dorsal fin nearer to end than to origin of ventral fin; pectorals very broad, their widest portion at beginning of posterior third of disk; caudal broad and depressed; sides of tail each with a strong lateral keel. Reddish-brown above, paler below. This species attains a length of 1 metre, frequenting coasts of Southern Japan. Viviparous, the young being brought forth in the later spring. This fish tasty.

Rhynchobatus djiddensis (Forskål)
“Tongari”
PL. VIII, fig. 5. ×¹/₆

Snout produced and pointed at tip; distance between mouth and end of snout equal to from one-fourth to one-fifth of entire length, excluding caudal fin; disc broad posteriorly, its width being equal to ³/₄ of its length. Spiracle is close behind eye. First dorsal fin opposite to ventral fin; second dorsal bagins opposite extremity of first dorsal fin. Lateral keel begins a little above termination of ventral fins. Body grey above with white spots; a black spot present at root of ventral fins.





ガ ン キ エ ヒ
Raja kenojei Müller & Henle
(第九圖版 第一圖) ×¹/₆

體盤の幅は其の長さの 1³/₁₀ 倍に等しく、吻長は眼幅の 1¹/₂ 倍にして、口幅の 1³/₆ 倍なり。體は菱形を呈す。體盤の幅は其の長さより大にして、體盤の兩側角を引ける線は體盤の長さの中央部を走る。吻は幅狭く突出せり。體盤の前縁は微かに波状をなす。兩顎齒は小さく菱形にして鋪石狀に並び上顎には 45 列並べり。鼻孔は大きく、兩鼻孔間隔は廣く、各鼻孔は口角と深き溝に依りて連絡せり、噴水孔は卵形にして甚だ大なり。然れども眼より稍小さく、眼の直後にあり。鰓孔は小さく、其の長さは噴水孔の直径より短し。眼の内縁には 5 個の鋭き棘 1 列に並び、體盤の中軸前方に 1 勁棘と、尾部に 5 列の不規則に並べる棘あり(但し幼魚に於ては 1 列)。2 背鰭は各分離し、第二背鰭は小なる尾鰭と連続せり。體色背部は褐色にして下方は白色なり。體盤背面には小黑點を散布し、胸鰭基底の背面には 2 個の大なる淡褐斑紋ありて、各班紋には、黑色輪を有す。尾部背面には 9 條の不明瞭なる黑色横線あり。體長 600 耗に達す。北日本に普通にして、卵生なり。卵殻は四角形にして各角より糸狀物を出だして海藻に纏絡す。春季淺海に於て産卵す。1 産 6 尾以上なり。

イ ト マ キ エ ヒ
Mobula japonica (Müller & Henle)
(第九圖版 第二圖) ×¹/₁₂

體盤の幅は長さの 1⁴/₅ 倍なり。尾部は體盤の長さの 3 倍に相當す。體盤は甚だ幅廣く、其の外角は鋭く、胸鰭基底は頭部に迄延長せず。頭部は前端截形にして、其の前縁各側に耳狀の 1 大頭鰭ありて前方に向へり。兩顎齒は甚だ小さく、鈍く、粒狀なり。眼は側在す。尾部は甚だ細長く、鞭狀にして、兩腹鰭間の垂直上に 1 小背鰭あり。尾部各側に 1 列白き小瘤狀隆起物並列せり。體長 2.5 米に達し、日本各地の沿岸に稀に漁獲さる。

ツ バ ク ロ エ ヒ
Pteroplatea japonica Temminck & Schlegel
(第九圖版 第三圖) ×¹/₆

體盤著しく幅廣く、其の長さの 2 倍なり。體は横に擴張せる菱形にして其の外角は多少鋭し。頭は幅廣く、吻は小なり。兩顎齒は鋪石狀に並列せり。鼻孔は甚だ大きく大なる鼻瓣を具へ、噴水孔は大にして眼の直後にあり。尾部は體盤より短く、背鰭及び尾鰭を有せざるも尾部の¹/₅ 前方の背面には稍小なる 1 鋸齒狀の棘あり。體色背部は褐青色にして下面は白く、尾部には 8 條の淡黑色輪あり、我國各地の沿岸に産すれども重要魚にあらず。

シ ビ レ エ ヒ
Narke japonica (Temminck & Schlegel)
(第九圖版 第四圖) ×¹/₃

體盤の幅は長さの約 1¹/₅ 倍にして、尾部の長さより稍幅廣し。吻長は噴水孔間の幅に等し。體盤は圓く、幅は長さより大にして、頭は小さく、圓く、先端は鈍圓なり。眼は甚だ小さく、大なる噴水孔の前縁に位せり。鼻孔は大きく、相互に接近し、兩鼻孔間に大なる 1 中央瓣あり。口は甚だ小さく、口唇肥厚せり。兩顎齒は小さく平坦にして鋪石狀に並列す。體には瘤狀隆起或は棘なけれども小孔に富む。殊に胸鰭の外縁に沿ひて發達せり。尾部は短く、幅廣く、縦扁し其の兩側に沿ひて幅廣き側褶走れり。稍大なる 2 背鰭を有す。體色背部は黑褐色にして、不規則なる黑點僅かに存せり。下面は淡く斑點なし。體長 400 耗に達し、南日本に産するも饒産せず。頭と胸鰭との間に 1 對の大なる發電器あり。

ア カ エ ヒ
Dasyatis akajei (Müller & Henle)
(第九圖版 第五圖) ×¹/₆

體盤は幅廣き卵形にして最も幅廣き部分は其の長さの²/₃ 前方に位す。吻は甚だ短く且鈍し。齒は平坦にして鋪石狀に並ぶ。眼隔及び眼の後方に、小棘の粗造面ありて、體盤背中線には 1 列の棘並び、尾部に迄延長し尾棘に於て終れり。尾部は長く、細くして鞭狀をなし其の長さは體盤より長し。背鰭及び尾鰭を欠く。體色背部は暗褐色にして、下面は淡黄赤色なり。體長 1 米に達す。日本沿岸一帯に産すれども特に南日本に多し。七、八月の候 10 尾内外を胎生す。尾棘には峻烈なる毒腺を有す。相當美味なり。

ト ビ エ ヒ
Myliobatis tobiyei Bleeker
(第九圖版 第六圖) ×¹/₆

體長は頭長の 3 倍あり。體盤の幅は長さの 1¹/₂ 倍なり。頭長は吻長の 2 倍に相當す。體盤は幅廣く、菱形にして、其の外角は鋭し。頭鰭は吻の前端に於て、1 個の軟き凸出したる附屬器となれり。頭部は凸出し、肥厚して背面は圓し。眼は小さく、側在す。兩顎齒は同様にして、大きく扁平にして鋪石狀に並列せり。背鰭は甚小さく、腹鰭の後方に起り、其の直後に側扁せる 1 鋸齒狀の棘あり。尾部は甚だ長く鞭狀にして、先端糸狀となれり。體色背部は暗褐色、腹面は白く尾部は黒し。全長 1.5 米に達し南日本の沿岸に普通に産す。六、七月の候卵生す。

Raja kenojei Müller & Henle
“Gangi-ei”
PL. IX, fig. 1. ×¹/₆

Width of disc equal to 1³/₁₀ times its length; length of snout equal to 1¹/₂ times inter-orbital width, and to 1²/₆ times width of mouth. Body rhomboid in shape, width of disc longer than its length, angle of disc about opposite centre of its length. Snout narrowly produced. Anterior margin of disc is slightly undulated. Teeth of jaws small, rhomboidal, paved, and arranged in about 45 rows in upper jaw. Nostrils large, broadly separated, and confluent with corners of mouth in a deep groove. Spiracle oval and very large, but a little smaller than eye, being situated directly behind latter. Gill openings very small and their width narrower than diameter of spiracle. Inner margins of eyes each with about five pungent spines; a large spine at centre of disc in front and 5 irregular rows of spines on back of tail, but only 1 of these developed in the young. Two dorsal fins separated, and the second confluent with small caudal. Body brown above, white below; upper surface of disc marked with many small black spots; at base of pectoral fins there are two large light brown blotches surrounded by a black line; there are nine indistinct blackish cross-bands on upper surface of tail. Attains a length of 600 mm. This species very common in Japan, and oviparous in habit, egg capsules being rectangular, with corners prolonged in filament to attach to the sea-weeds. Spawns in shallow waters in Spring and lays more than 6 eggs at a time.

Mobula japonica (Müller & Henle)
“Itomaki-ei”
PL. IX, fig. 2. ×¹/₁₂

Width of disc equal to about 1⁴/₅ its length; length of tail about 3 times that of disc. Disc very broad and its angles acute; head free from pectoral fin and truncated in front, with a large cephalic fin on each side, which is of the shape of a horn directed forward. Teeth in both jaws very small, with obtuse tubercles. Tail very slender, and whip-like with a dorsal fin between ventrals; on each side of tail there is a series of small, white tubercles. Length attains to 2 metres, not common in Japanese waters.

Pteroplatea japonica Temminck & Schlegel
“Tubakuro-ei”
PL. IX, fig. 3. ×¹/₆

Disc very broad, its width being equal to about twice its length. Body sub-rhomboid, its outer angles more or less acute; head very broad and snout very small. Jaws with tessellated teeth. Nostrils very large, with large flaps; spiracle also large, directly behind eye. Tail shorter than disc, without dorsal and caudal fins, and there is a rather small serrated spine on upper surface of tail in its one-third. Body brownish-blue above, whitish below; tail with eight dark rings as broad as the interspaces. This species more or less common on all coasts of Japan.

Narke japonica (Temminck & Schlegel)
“Sibire-ei”
PL. IX, fig. 4. ×¹/₃

Width of disc equal to about 1¹/₃ times its length, and somewhat wider than length of tail; length of snout equal to space between spiracles. Disc roundish, head broadly rounded anteriorly. Eye very small, situated at anterior margin of large spiracle; nostrils large, rather close together, with a large median flap between them. Mouth small and lips very thick; teeth of jaws small, flat and paved. Body without any tubercles or prickles, but with many pores, these being especially abundant along outer portion of pectoral fin. Tail broad and depressed, a broad lateral fold running along either side. There is a comparatively large dorsal fin.

Body blackish-brown above with a few irregular black spots; lower surface pale brown, without spots. Attains a length of 400 mm. This species is of rather common occurence in southern Japan. There is a pair of large electric organs between the pectoral fins and head.

Dasyatis akajei (Müller & Henle)
“Aka-ei”
PL. IX, fig. 5. ×¹/₆

Disc broadly oval, its widest portion being about²/₅ of its length. Snout slightly produced and blunt; teeth flat and paved. An area posterior to and between the eyes has a patch of callosity. Row of spines in median line of disc extending to anterior part of tail, and continuous with large caudal spine. Tail long, slender and whip-like, much longer than disc. No caudal or dorsal fins.

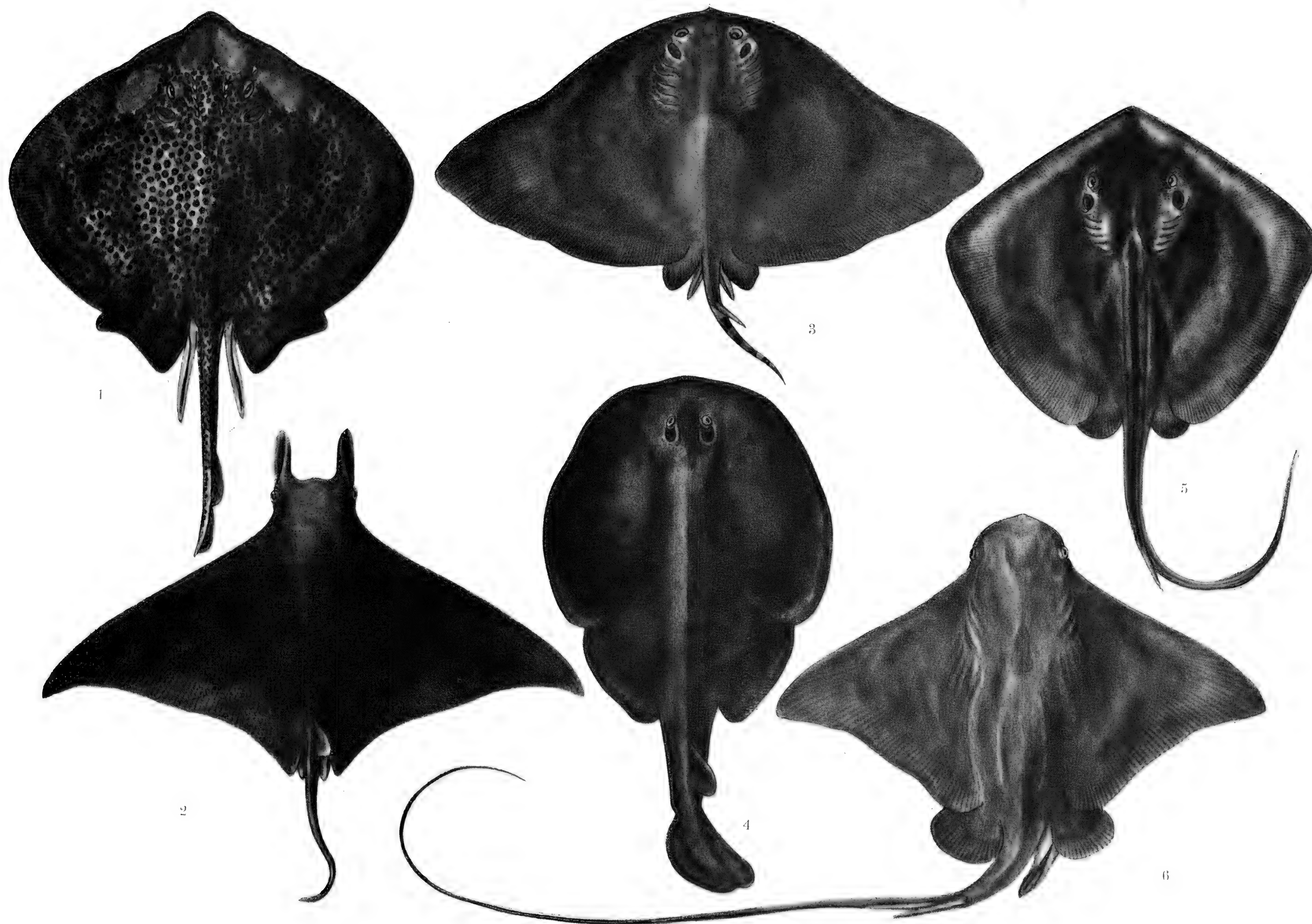
Body dark-brown above, and lower surface light orange red. Length 1 metre; common along coasts of Japan, especially abundant in sandy bays of southern Japan. Viviparous, young being born alive in July and August.

The fish is much dreaded by fishermen, on account of the poison which it injects into wounds inflicted with its caudal spine.

Myliobatis tobijei Bleeker
“Tobi-ei”
PL. IX, fig. 6. ×¹/₆

Length of body equal to 3 times that of head, width of disc more than 1¹/₂ times that of snout; length of head 2 times that of snout. Disc rhombic, and its outer angles acute; cephalic fins forming a soft, convex appendage in front of snout. Head produced, thick and rounded above; eye small and lateral. Jaws equal; teeth very large, few in number, flat and tessellated. Dorsal fin very small, inserted behind ventral fins; there is a compressed and serrated spine directly behind dorsal fin; tail very long and filamentous. Colour dark brown above, whitish below.

Body 1 metre in length. It is rather common on coast of southern Japan; is oviparous.





チ ヨ ウ サ メ <p>Acipenser mikadoi Hilgendorf</p> （第十圖版 第一圖） × ¹ / ₅
 <p>D. 35 to 40; A. 28 to 31.</p>

體長は頭長の 3³/₄ 倍乃至 3¹/₅ 倍、體高の 6¹/₂ 倍乃至 7 倍なり。頭長は吻長の 2 倍なり。體は延長して前方は圓筒形をなす。頭は低く吻は稍鋭く尖がれり。體には骨盤5縦列に並べり。背側板は大きく 7 乃至 8 個よりなり、體側板は 34 個、腹側板は 9 個あり。尙此の外に前方背部近くに小形の星狀板あり。即ち背側板の下に 14 個よりなる小形脊椎板の不規則なる 1 列あり。口は下面にありて齒なく、口の前方なる吻の下面に 4 條の觸鬚 1 横列に並べり。體は背部灰青色にして下面は白し。體長 1.5 米に達す。肉は甚だ美味にして卵巣よりは Caviar を製し、鰵魚よりは魚膠を製す。四月より 5 月に潮河し、六月より八月の間に産卵す。卵は甚だ小さく、1 尾の魚は 800,000 乃至 2,400,000 個の卵を放つ。卵は寒天質に依つて水草或は其の他の物體に粘着す。卵は 1 週間内外にて孵化す。孵化時の大きさ 13 耗あり。幼魚は秋期海に下る。

キ ン サ メ <p>Chimaera phantasma Jordan & Snyder</p> （第十版 第二圖） × ¹ / ₅

體は延長し、後方著しく細長にして尾部は糸狀を呈せり。頭は肥厚し、稍側扁す。吻は短く圓鈍なり。雄の額には 1 個の鈎狀攫取器ありて其の先端下面に存する多くの鋭棘は後方に向へり。此の攫取器は交尾の際雌に懸垂の用をなすものにして平時は窩中に藏むるを得。口は小さく下面にあり。鰓腔内には四個の鰓裂あるも外鰓孔は 1 個にして小さく、胸鰭基底の前方に開口せり。口蓋方骨軟骨は頭蓋骨と癒合す。骨格は軟骨なり。第一背鰭は頭部の直後に始まる。第一背鰭の前縁には長き、側扁せる棘ありて其の前縁に隆起縁あり。第二背鰭は長く、低く、尾鰭上葉とは深き 1 缺刻によりて離る。尾鰭は長く、頭長の 2 倍あり。臀鰭あり。側線は眼の上下を走りて眼の後方にて合し、體側の上方に沿ひて走れり。側線は一樣の波狀をなす。體色銀白色にして、體側には 2 條の褐色縦帶走れり。體長 1 米に達す。本種は普通に南日本の深海に産す。

キ ビ ナ コ <p>Stolephorus japonicus (Houttuyn)</p> （第十圖版 第三圖） ×1

D. 11; A. 13; V. 8.
體長は頭長の 4¹/₂ 倍、體高の 7 倍なり。頭長は吻長の 4 倍、眼徑の 3 倍に相當す。體は延長し稍圓筒形にして大なる溝き離脱し易き鰭を有す。腹底は圓く稜鱗なし。吻は稍鋭し。齒及び側線なし。腹鰭は背鰭の中央の下方に始まる。體は淡青褐色にして下方淡く、體側には幅廣き銀白色の 1 縦走帶あり。南日本に多く、體長 80 耗に達す。本種は外洋性にして、五、六月の産卵期には淺海に集まる。

ギ ス <p>Pterothrissus gissu Hilgendorf</p> （第十版圖 第四圖） × ¹ / ₅
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D. 56 to 65; A. 12; scales about 112.
體長は頭長の 4 倍、體高の 6¹/₂ 倍なり。頭長は吻長の 3 倍、眼徑の 3¹/₂ 倍乃至 4 倍なり。體は延長し、尾部は

細長く、頭は大にして無鱗なり。頭頂は幅廣く、平坦なり。頭側には 1 大粘液溝あり、1 隆起線は下唇より鰓蓋隅に延長せり。下顎唇は肥厚せり。側線あり。背鰭基底は著しく長く、ほとんど背面の全長に延長せり。臀鰭小なり。鰭は離脱し易し。體は銀白色なり。體長 450 耗に達す。北日本の深海に多く、春季産卵す。蒲鉾の原料として重要なるものなり。

コ ノ シ ロ <p>Konosirus punctatus (Temminck & Schlegel)</p> （第十圖版 第五圖） × ² / ₃

D. 16; A. 23; V. 8; scales 55.
體長は頭長の 4 倍、體高の 3¹/₄ 倍なり。頭長は眼徑の 6 倍に相當す。體は卵形にして著しく側扁し、腹底には強き稜鱗あり。頭は稍短く、無鱗なり。吻は下顎より稍長し。口は水平にして、稍下方にあり。齒なし。鰓耙は甚だ纖細にして長し。胃は鳥の砂囊の如し。側線を缺く。背鰭の最後の軟條は延長して、糸狀をなし尾鰭基底に迄達せり。臀鰭は甚だ低く、尾鰭は深く凹入せり。體色背部は淡青褐色にして、下方淡く、體側の中央より上方の各鰭の中心には 1 暗褐色點ありて此れ等各點は平行せる多くの縦走帶を作れり。胸鰭基底の上方體側に 1 黒色斑紋あり。南日本に普通の種類にして、體長 300 耗に達す。本種は専ら植物性 Plankton を食し、爲に胃は鳥の砂囊形となれり。四、五月頃産卵す。性音響に感じ易きが故に此の習性を利用して主に刺網を以て漁獲さる。美味なり。

ヒ ラ <p>Ilisha elongata (Bennett)</p> （第十圖版 第六圖） × ² / ₃

D. 16; A. 51; scales 56.
體長は頭長の 4 倍、體高の 3²/₃ 倍なり。頭長は眼徑及び吻長の各の 3³/₄ 倍なり。體高稍高く、著しく側扁し。胸部及び腹面には強き稜鱗あり。眼には僅かに脂腺あり。口は斜位にして、下顎は突出せり。兩顎齒は強けれども、舌上、口蓋骨及び翼狀骨の齒は小さく、鋤骨には齒なし。臀鰭基底は長く、腹鰭は小にして、其の基部は小背鰭の前方にあり。背鰭は吻端と尾鰭基底の中央部に始まる。體色背部は淡黒青色にして側方及び下面は銀白色なり。體長 300 耗に達す。本種は南日本に普通なれども、東印度及び支那に多産す。遠洋魚にして五、六月の産卵期には内灣に來る。

エ ツ <p>Coilia nasus (Temminck & Schlegel)</p> （第十圖版 第七圖） × ¹ / ₅
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D. 13; A. 81; scales 62.
體長は頭長の 7 倍、體高の 7 倍に相當し。頭長は眼徑の 5¹/₂ 倍乃至 6 倍あり。吻長は眼徑より稍長し。體は延長し、著しく側扁し、後方は甚だ細長なり。胸底及び腹面には強き稜鱗あり。口は下面にありて、前上顎骨は甚だ長く、胸鰭基底の中央に延長せり。吻は下顎より延長せり。兩顎、鋤骨、口蓋骨及び舌上に小鋭齒あり。臀鰭基底は著しく長く、尾鰭と連続せり。胸鰭の上方軟條は甚だしく延長して糸狀をなす。體長 300 耗に達す、本種は朝鮮、支那及び南日本の沿岸に産す。然れども我國にては少なし。四、五月の候河川を溯上して産卵す。

Acipenser mikadoi Hilgendorf
 <p>“Tyôzame”</p>
 <p>PL. X, fig. 1. ×¹/₅</p>

D. 35 to 40; A. 23 to 31.
Length of body equal to 3³/₄ to 3¹/₅ times that of head, and to 6¹/₂ to 7 times that of depth of body; length of head twice that of snout. Body elongated and cylindrical; head low and snout rather sharply pointed. Body with five longitudinal rows of plates; dorsal plates large, 7 or 8 in number; lateral 34; ventral 9. Besides these there are small stellate plates scattered between the large plates, 14 of these forming an irregular row below dorsal series. Mouth inferior, without teeth; anterior part of mouth with four long barbels. Body greyish-blue above, white below. Attains to 1.5 metres in length.
Sturgeon ascends the rivers Tesio, and Isi-kari, both in Hokkaido, in April or May, spawning from June to August. Eggs small, and produced in great numbers, a single female yielding about 800,000 to 2,400,000 at one season. Diameter of egg 2 mm. in length, and invested with a gelatinous sheath, so that it readily adheres to water plants or other objects; young fry descend to sea in early winter. Flesh is good as food, but it is seldom consumed in Japan, on account of the rarity of the fish.

Chimaera phantasma Jordan & Snyder
 <p>“Ginzame”</p>
 <p>PL. X, fig. 2. ×¹/₅</p>

Body elongated, tapering in a long and filamentous tail. Head deep and somewhat compressed; snout short and blunt; frontal holder depressible in socket, and its lower round extremity being furnished with many sharp spines which are directed backwards. Mouth small and inferior. Gill cavity has four clefts within, but only one small external opening in front of base of pectoral fin. Palato-quadratum confluent with skull. Skeleton is cartilaginous. First dorsal fin inserted directly behind head, with a long, compressed spine in front, which is keeled on front side; second dorsal fin is long and low, separated from upper caudal lobe by a deep notch; caudal fin very long, filamentous, and twice as long as the head; anal fin present. Lateral line runs around eye, and along upper sides of body, the anterior portion of the latter having regular strong undulations.
Body silvery-white on sides of which run two brown bands. Total length attains to 1.5 metres. This species rather common in deep waters of southern Japan.

Stolephorus japonicus (Houttuyn)
 <p>“Ribinago”</p>
 <p>PL. X, fig. 3. ×1</p>

D. 11; A. 13; V. 8.
Length of body about 4¹/₂ times that of head, and 7 times that of depth of body; length of head 4 times that of snout, and 3 times diameter of eye. Body very elongated, rather cylindrical, covered with large, thin, deciduous scales; belly rounded, without serrature. Snout sharply pointed at tip. Teeth obsolete. Ventral fins inserted below middle of dorsal fin. Body pale brownish-blue above, paler below; sides of body with a broad silver longitudinal band. Occurs abundantly throughout southern Japan, and attains to a length of 80 mm.
Pelagic in habit, entering shallow bays to spawn in May or June.

Pterothrissus gissu Hilgendorf
 <p>“Gisu”</p>
 <p>PL. X, fig. 4. ×¹/₅</p>

D. 56 to 65; A. 12; scales 112.
Length of body equal to 4 times that of head

and to 6¹/₂ times depth of body; length of head 3 times that of snout, and 3¹/₂ to 4 times diameter of eye. Body elongated, tail slender; head large, scaleless, its top being broad and flattened; there are large mucous channels on sides of head, and a sharp ridge extending from lower lip to opercular angle; lip of lower jaw thick. Lateral line present. Base of dorsal fin much elongated, extending almost along the whole length of back, but anal fin very short. Scales very deciduous. Body silvery. It attains to a length of 450 mm. Rather common in deep waters of northern Japan; spawning in Spring.

Konosirus punctatus (Temminck & Schlegel)
 <p>“Konosiro”</p>
 <p>EL. X, fig. 5 ×²/₃</p>

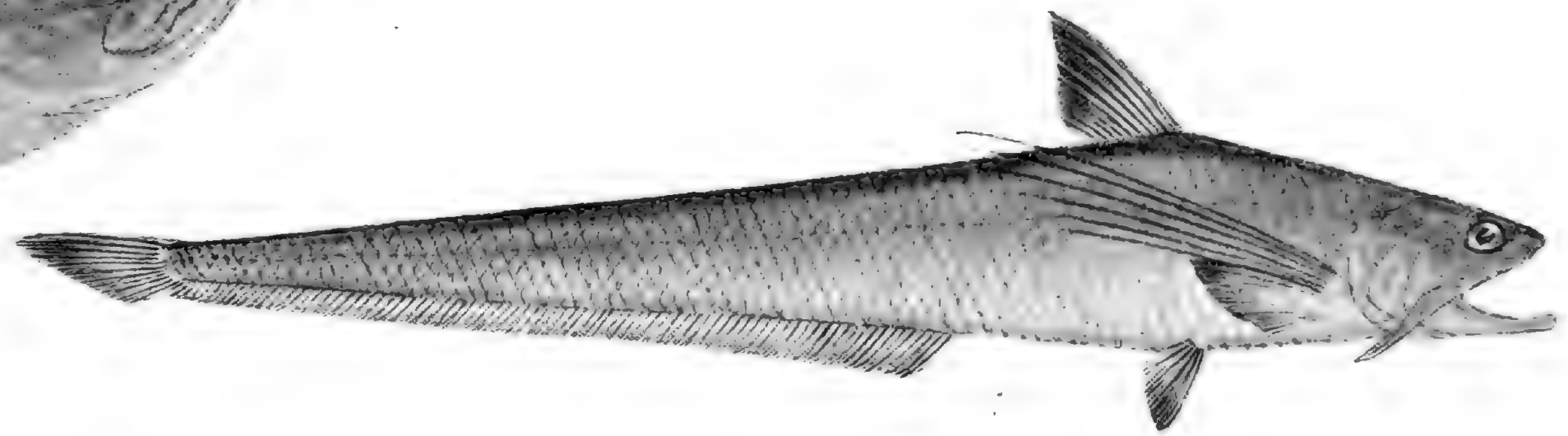
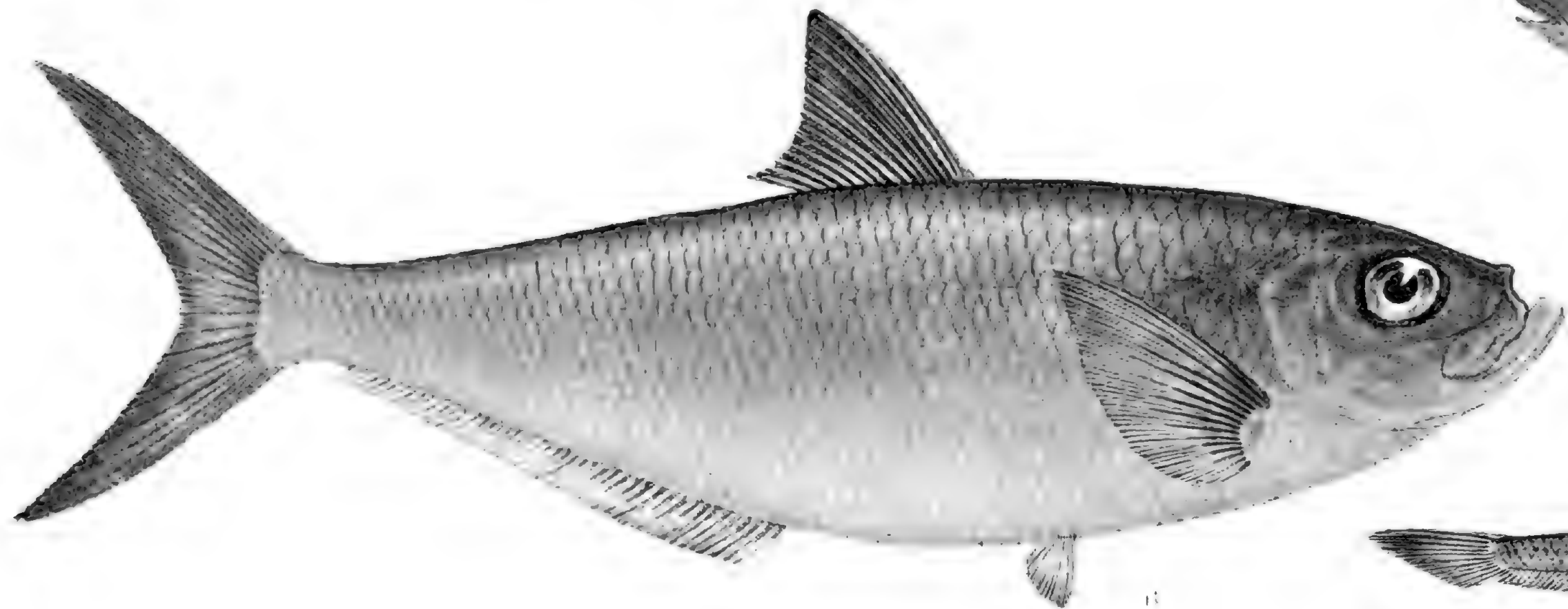
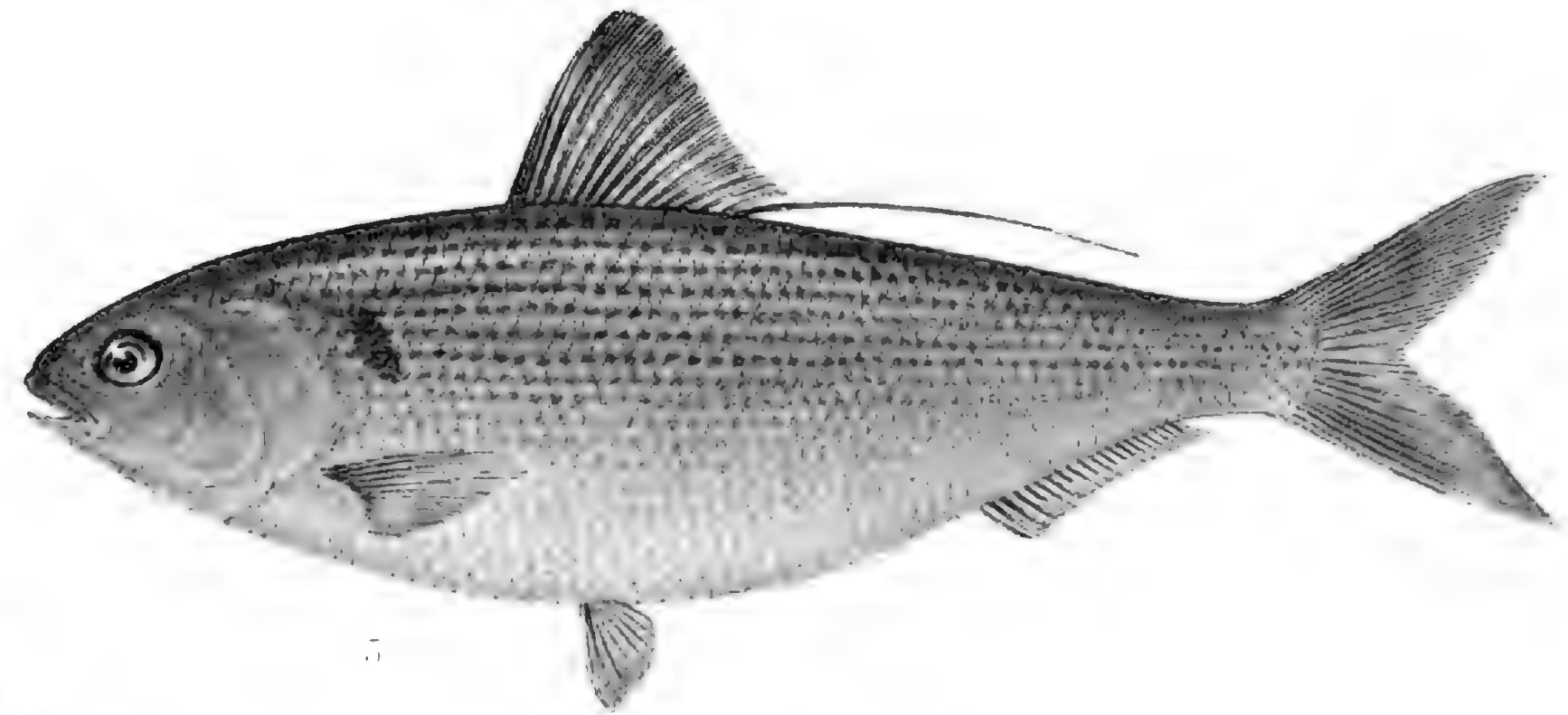
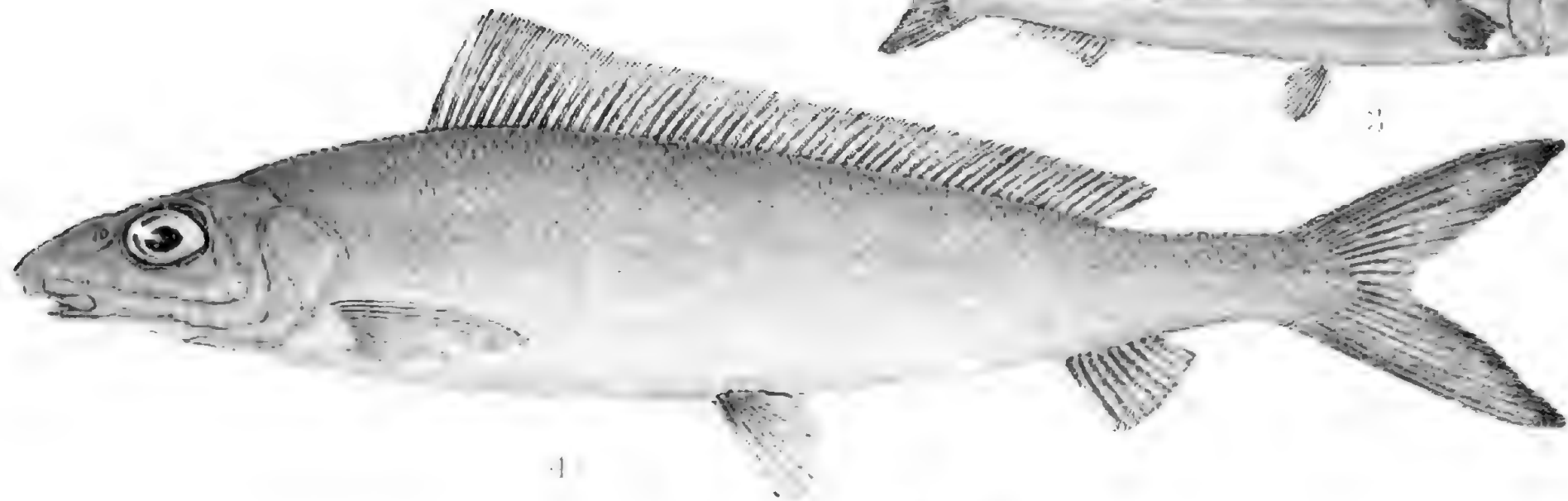
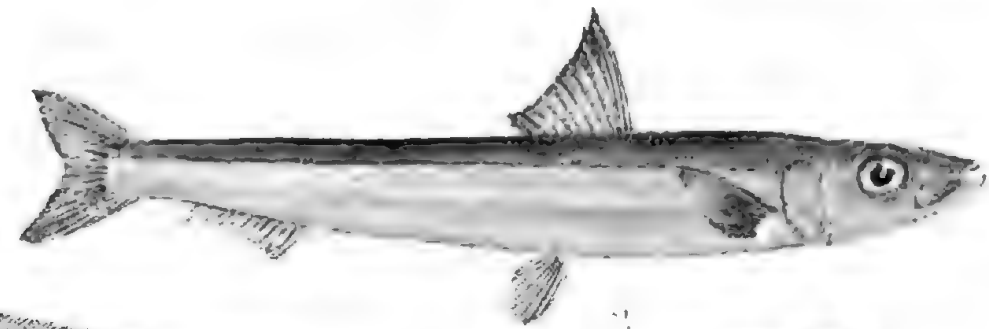
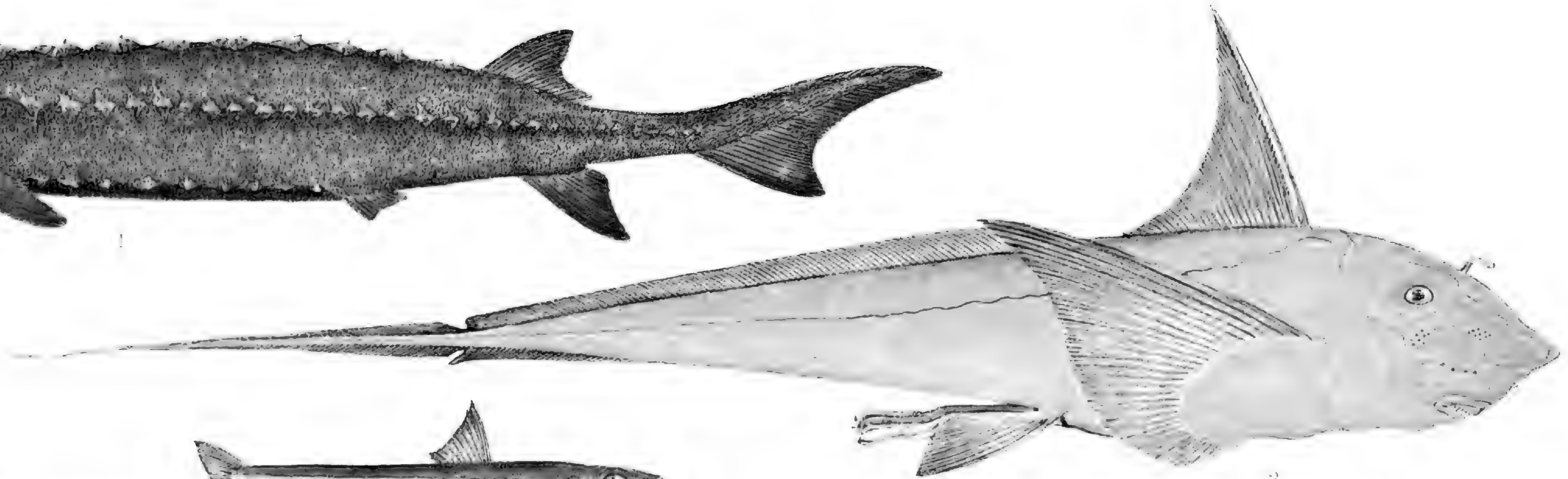
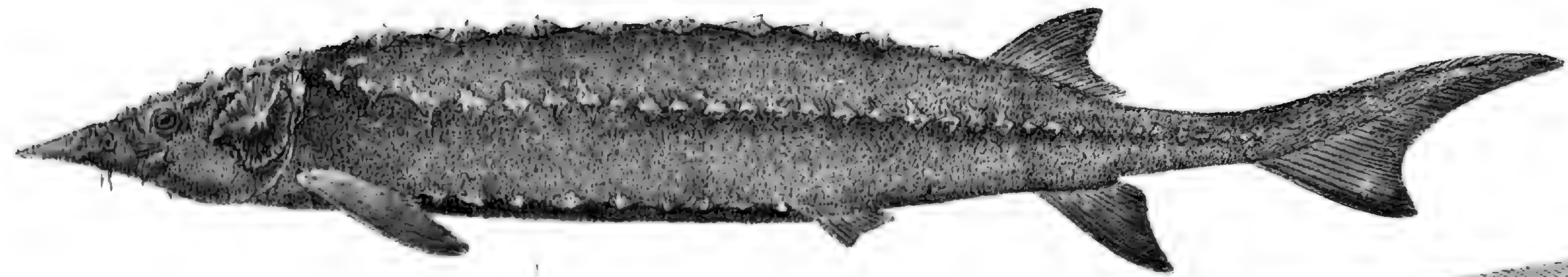
D. 16; A. 23; V. 8; scales 55.
Length of body equal to 4 times that of head, and to 3¹/₂ times depth of body; length of head 6 times diameter of eye. Body rather ovate and strongly compressed; belly more compressed, its margin being armed with sharp scutes directed backwards. Head rather short, and scaleless; upper jaw a little longer than lower; mouth horizontal slightly inferior; teeth absent. Gill rakers very fine and slender. Function of stomach similar to that of gizzard of bird. Lateral line absent. Last ray of dorsal fin produced and filamentous, reaching base of caudal fin; anal very low; caudal deeply emarginated. Body deep-blue above, silvery below; and each scale on upper part of body has a darkbrown spot in the middle, the spots forming longitudinal rows; there is a large black blotch on the shoulder. Very common in southern Japan, attaining to a length of 300 mm. Breeds in April to May. Food of this fish is mainly phytoplanktons. Much consumed as food by middle-classes of Japan.

Ilisha elongata (Bennett)
 <p>“Hira”</p>
 <p>PL. X, fig. 6. ×²/₃</p>

D. 16; A. 51; scales 56.
Length of body equal to 4 times that of head, and to 3²/₃ times depth of body; length of head 3³/₄ times of eye, and also of snout. Body rather deep and strongly compressed, thorax and abdomen strongly serrated. Eye partially covered with adipose eye-lid. Mouth oblique, lower jaw strongly projecting; jaws with strong teeth; those on tongue, palatines and pterygoids small; no teeth on vomer. Base of anal fin very long; ventral small, inserted before small dorsal which is inserted about midway between tip of snout and base of caudal fin. Body light blakish-blue above, silvery white on sides and below. Attains to 300 mm. in length, and found in southern Japan as well as in the Indian Ocean and Chinese Sea. Pelagic in habit, and breeding in May or June.

Coilia nasus (Temminck & Schlegel)
 <p>“Etu”</p>
 <p>PL. X, fig. 7. ×¹/₅</p>

D. 13; A. 81; scales 62.
Length of body equal to 7 times that of head, and to about 7 times depth of body; length of head 5¹/₃ to 6 times that of eye, and snout a little longer than diameter of eye. Body elongated, strongly compressed, tapering posteriorly; abdomen and throat edged with sharp scutes. Mouth sub-inferior; premaxillary very long, extending to middle of base of pectoral fin; snout projecting beyond lower jaw; jaws, vomer, palatines and tongue with small sharp teeth. Base of anal fin exceedingly long and confluent with caudal; upper rays of pectoral strongly elongated and filamentous. This fish usually attains to a length of 300 mm., occurring on the coasts of Korea, China and southern Japan, although not abundant in the latter. It goes up the rivers in Spring to spawn.



サ ツ バ
Sardinella zunasi (Bleeker)
(第十一圖版 第一圖) ×1

D. 17; A. 19; V. 8; scales 40 to 44.

體長は頭長の5倍、體高の4倍なり。頭長は吻長の7倍、眼徑の2½倍なり。體高は高く、卵形にして大に側扁せり。鱗は堅く體に密着せり。腹底は著しく側扁し強き鋭き稜鱗を有す。頭は稍小さく、口は又小にして殆んど垂直をなし、下顎は稍突出せり。眼は大にして脂脰を飲く。側線なく、腹鰭は背鰭の中央下に始まる。體色背部は暗綠色、下方は白し。體長200 耗に達す。南日本の淺海に多し。四、五月の候産卵す。

マ イ ワ シ
Sardinia melanosticta (Temminck & Schlegel)
(第十一圖版 第二圖) ×1

D. 16 to 17; A. 17; V. 8; scales 45.

體長は頭長の4⅓倍乃至4½倍、體高の6倍乃至7倍なり。頭長は吻長の4½倍、眼徑の5倍なり。體は延長し、前方は稍圓筒形にして腹底は圓く、稜鱗は甚だ微弱なり。眼は厚き脂脰を以て蔽はる。口は小さく下顎は突出す。齒は舌上にあるのみなり。體には甚だ薄く且離脱し易き櫛鱗を有す。腹鰭は背鰭の中央垂直下に始まり、背鰭起部は尾鰭基底より吻端に近し。臀鰭の基底は背鰭の基底より長し。體は背部暗青色にして體側及び腹部は銀白色なり。體側には濃青黑色の圓點一縱列をなして並べり。本種は北海道より琉球及びそれより以南に迄分布すれども千葉、長崎、三重、愛媛、鹿児島等の諸縣に多産す。體長240 耗に達す。本種は鰺と同じく我國の主要漁獲物の一なり。遠洋魚なるも産卵期に至れば内灣に来游す。産卵時期は地方に依りて異れど主に一月より五月の間に行はる。

ミ ズ ン
Sardinella mizun (Kishinouye)
(第十一圖版 第三圖) ×1

D. 19; A. 18; V. 8; scales 46.

體長は頭長及び體高の各5倍なり。頭長は眼徑の3⅓倍なり。體高稍高く、側扁し、腹底は著しく側扁し鋭き稜鱗を有す。鱗は硬く離脱し易からず。下顎は上顎よりも突出せり。舌上以外に齒なし。眼に脂脰なし。背鰭起部は尾鰭基底より吻端に近く、腹鰭は背鰭基底の中央下に始まる。體長150 耗に達し、琉球に産す。

ヤマトミズン
Sardinia okinawensis (Kishinouye)
(第十一圖版 第四圖) ×1

D. 19; A. 18; V. 8; scales 43.

體長は頭長の約5倍、體高の5½倍なり。頭長は眼徑の3⅔倍なり。體は延長し、稍圓筒形にして腹部は圓く、稜鱗は強からず。眼に脂脰あり。下顎、口蓋骨及び舌上に小齒ありて鋤骨になし。背鰭は吻端と尾鰭基底の中間に始まる。腹鰭起部は背鰭の前方下にあり。體長210 耗に達し、琉球附近に産す。

ウ ル メ イ ワ シ
Etrumeus micropus (Temminck & Schlegel)
(第十一圖版 第五圖) ×1

D. 20; A. 11; V. 9; scales 59.

體長は頭長の4倍乃至4⅔倍、體高の6乃至6½倍なり。頭長は吻長の3½倍、眼徑の3倍なり。體は延長し、稍圓筒形なり。腹部は圓く稜鱗なし。側線を飲く。眼は大きく、肥厚せる脂脰を有す。口は先端にありて、齒は小さく、兩顎、鋤骨、口蓋骨、翼狀骨及び舌上等にあり。背鰭は腹鰭よりも全く前方にありて、尾鰭基底より前端に近し。臀鰭は甚だ小なり。體色背部は暗青色、體側及び腹部は銀白色なり。體長300 耗に達す。南日本に多く、外洋性なるも五月より六月の産卵期に至れば内灣に来る。産業上甚だ主要なる種類に屬す。

ニ シ ン
Clupea pallasii Cuvier & Valenciennes
(第十一圖版 第六圖) ×1

D. 16; A. 14; scales 52.

體長は頭長の4⅓倍、體高の4倍なり。頭長は吻長の4倍、眼徑の2½倍乃至3倍なり。體は延長側扁し、腹部の稜鱗は微弱なり。眼は大にして脂脰あり。口は小さく、下顎は稍や突出す。前上顎骨に齒なく、下顎齒は小さく、舌上及び鋤骨に2列の小齒あり。鱗は離脱し易し。腹鰭は背鰭の中央垂直下に背鰭は吻端と尾鰭基底との略中央に始まる。體色背部は暗青色にして下方は銀白色なり體長は250 耗に達す。本種は北海道及び樺太の西岸及び朝鮮等に多産し。我國漁獲物の主位を占む。産卵期は三月より六月に亘り、主に北海道及び樺太の西海岸にて産卵す。稚魚は宗谷海峽より Okhotsk 海に出て多くは滿2年間千島以南の太平洋岸を東北に回游し、3年後は Okhotsk 海に出てて4年生鰺となれば大部分北海道及び樺太の西海岸に移動して産卵す。卵は粘着性にして海藻に附着す。

カ タ ク チ
Engraulis japonicus Temminck & Schlegel
(第十一圖版 第七圖) ×1

D. 14; A. 18; V. 7; scales 42.

體長は頭長の4倍、體高の7倍なり。頭長は吻長の5倍、眼徑の4倍なり。體は延長し、細長く、稍圓筒形にして、腹底は圓く、稜鱗なし。口は大きく、稍下位にして吻は突出して下顎を蔽へり。主上顎骨は甚だ長く眼の後緣下迄延長せり。兩顎に小齒あり。舌上の中央線上には有齒隆起線あり。鱗は大きく、薄弱にして離脱し易し。背鰭は吻端と尾鰭基底との中央部に始まる。腹鰭は小さく、其の起部は背鰭基部より稍前方に位す。體色背部は暗青色にして腹部は銀白色なり。體側に幅廣き銀白色の1縱帶あり。體長130 耗に達す。我國全體に多産すれども千葉、兵庫、山口等の諸縣特に多し。我國食用魚類中の重要なものの一なり。三月より七月の間に産卵す。卵は楕圓形にして龜裂あるを特徴とす。本種の幼魚(他種幼魚を混在する事あり)を「しらす」と稱し、是れの乾製したるものを「たたみいわし」と稱す。成魚の乾製品は之を「田作」或は「ごまめ」と稱し、何れも主要なる食料品なり。

Sardinella zunasi (Bleeker)
“ Sappa ”
PL. XI, fig. 1. ×1

D. 17; A. 19; V. 8; scales 40 to 44.

Length of body equal to 5 times that of head, and about 4 times the depth of body; length of head 4 times that of snout and 2½ times diameter of e. e. Body deep, rather oval, and much compressed, covered with large and firm scales; belly extraordinarily compressed, its margin having very sharp and strong scutes. Head rather small; mouth small sub-vertical, lower jaw projecting beyond the upper. Eye rather large; adipose eyelid obsolete. Lateral line absent. Ventral fin inserted under middle of dorsal.

Body darkish-blue above, and white below. This species is rather common in the shallow waters of southern Japan, attaining a length of 200 mm. Spawning season from April to May.

Sardinia melanosticta (Temminck & Schlegel)
“ Maiwasi ”
PL. XI, fig. 2. ×1

D. 16 to 17; A. 17; V. 8; scales 45.

Length of body equal to 4⅓ to 4½ times that of head and 6 to 7 times the depth of body; length of head 4½ times that of snout and 5 times diameter of eye. Body elongated and fairly compressed; belly rounded, with weak ventral scutes. Eye covered by thick adipose eyelid; mouth small, lower jaw projecting; no teeth except on tongue which has very small ones. Body covered with thin, deciduous ctenoid scales. Ventral fins inserted under middle of dorsal fin; origin of dorsal nearer to tip of snout than to base of caudal; base of anal longer than that of dorsal. Body darkish-blue above, side and belly silvery white; a row of bluish-black spots are arranged more or less distinctly along sides. Maximum length 240 mm.

Distributed from Hokkaido to Loochoo Islands, especially abundant in Nagasaki, Tiba, Mie, Ehime and Kagosima Prefectures.

The species is a pelagic fish, spawning from January to May at surface of inland bays; of very great economic importance both as a food and a fertiliser.

Sardinella mizun (Kishinouye)
“ Mizun ”
PL. XI, fig. 3. ×1

D. 19; A. 18; V. 8; scales 46.

Length of body equal to 5 times that of head and also that of depth of body; length of head 3⅓ times diameter of eye. Body somewhat deep, compressed; belly extraordinarily compressed, covered with sharp scutes. Scales rather firm, not deciduous. Lower jaw projecting beyond upper; there are no teeth except on tongue. Eyes with adipose eyelid. Insertion of dorsal fin nearer to tip of snout than to base of caudal; ventral beginning under middle of base of dorsal. It inhabits the coast of Ryukyu Islands, attaining a length of 150 mm.

Sardinia okinawensis (Kishinouye)
“ Yamato-mizun ”
PL. XI, fig. 4. ×1

D. 19; A. 18; V. 8; scales 43.

Length of body equal to about 5 times that of head and 5½ times the depth of body; length of head 3⅔ times diameter of eye. Body elongated and sub-cylindrical; belly rounded with scutes not very sharp. Eye covered by adipose eyelid. Teeth small in lower jaw, and on palatines and tongue, which are absent on vomer.

Dorsal fin inserted between tip of snout and base of caudal fin; ventral inserted below anterior portion of dorsal.

The fish occur only on the coast of Ryukyu Islands, attaining a length of 210 mm.

Etrumeus micropus (Temminck & Schlegel)
“ Urume-iwasi ”
PL. XI, fig. 5. ×1

D. 20; A. 11; V. 9; scales 59.

Length of body equal to 4 to 4⅔ times that of head and 6 to 6½ times the depth of body; length of head 3½ times that of snout and 3 times diameter of eye. Body elongated and rather cylindrical, abdomen rounded without serrature. Lateral line wanting; eyes large, covered with thick adipose eyelids. Mouth terminal; teeth minute, on jaws, vomer, palatines, pterygoids and tongue. Dorsal fin entirely before ventral fins and nearer to tip of snout than to base of caudal; anal very small. Body dark-blue above, and silvery below. Reaches 300 mm. in length.

Occurs very abundantly in southern Japan, being rather oceanic in habit. Occurs seldom in bays except in spawning season, which last from May to June. An economically important fish in Japan.

Clupea pallasii Cuvier & Valenciennes
“ Nisin ”
PL. XI, fig. 6. ×1

D. 16; A. 14; scales 52.

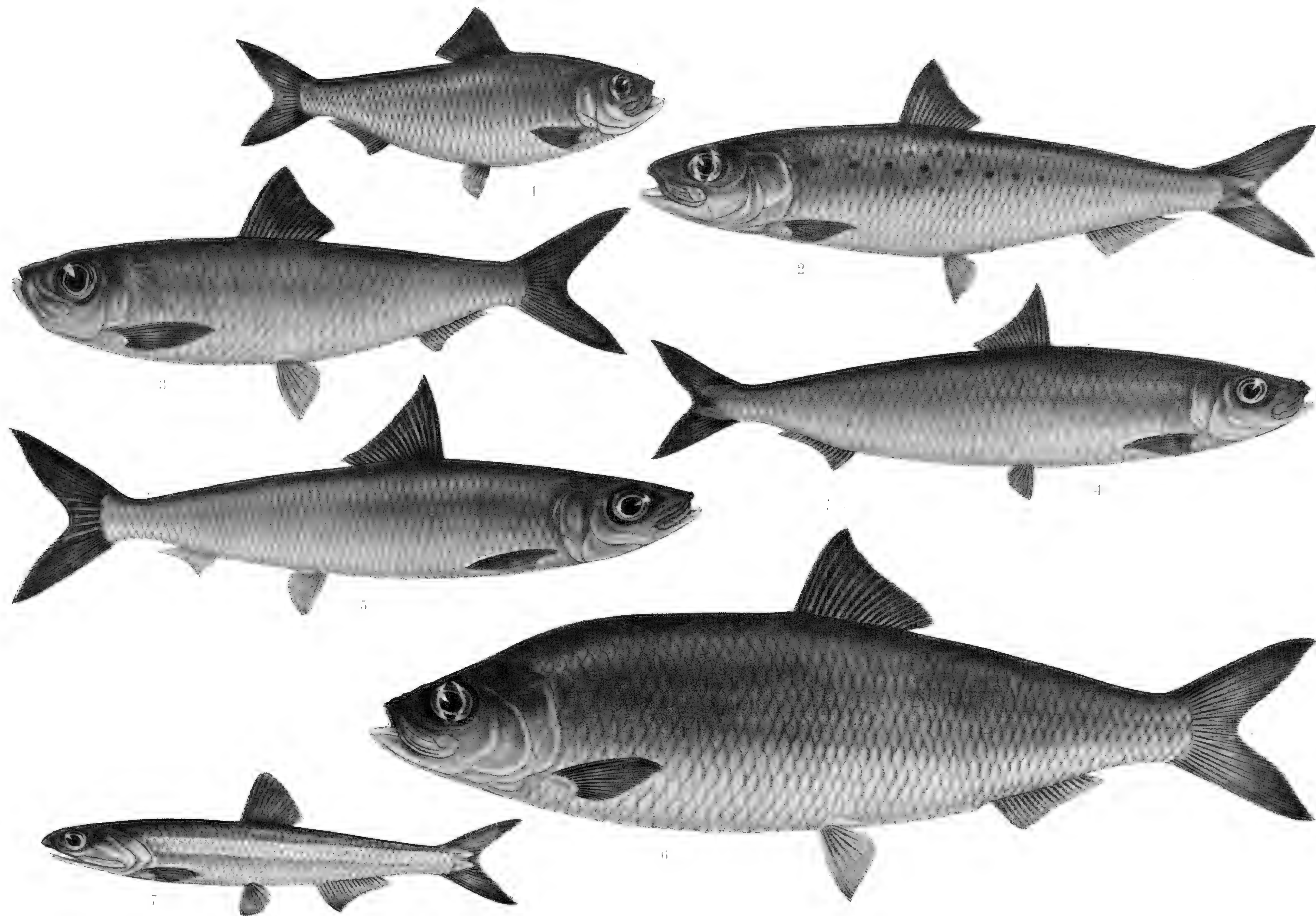
Length of body equal to 4⅓ times that of head and 4 times the depth of body; length of head 4 times that of snout and 2½ to 3 times diameter of eye. Body elongated compressed, ventral serratures being weak. Eyes large, with adipose eyelid; mouth small, lower jaw projecting; pre-maxillary without teeth. lower jaw with small, tongue and vomer with two series of small ones. Scales deciduous. Ventral fin, inserted below middle of dorsal fin, insertion of dorsal fin almost midway between tip of snout and base of caudal. Body bluish-dark above and silvery below. Attains a length of 350 mm.

Occurs in northern Japan so very abundantly, that it stands first in amount of catch in fishery statistics of Japan. Breeds in April to June, on west coast of Saghalien and Hokkaido, and also found abundantly on east coast of Korea. Eggs heavy, adhesive, sticking firmly to Sargassum or other seaweeds.

Engraulis japonicus Temminck & Schlegel
“ Katakuti ”
PL. XI, fig. 7. ×1

D. 14; A. 18; V. 7; scales 42.

Length of body equal to 4 times that of head and 7 times the depth of body; length of head 5 times that of snout and about 4 times diameter of eye. Body slender, elongated and somewhat cylindrical; belly rounded, without scutes, mouth large subinferior, snout projected, overlapping lower jaw; maxillary very long, extending for backward behind eye. Jaws with small teeth; a toothed ridge on middle line of tongue. Scales large, thin and deciduous. Insertion of dorsal fin just midway between tip of snout and base of caudal fin; ventral small, inserted somewhat below insertion of dorsal. Colour dusky-blue above, white below. Average length 130 mm. Occurs abundantly throughout Japan, and is one of the most important articles of food in this country. Pelagic in habit, spawning season lasting from March to June, egg has crucks on surface of yolk.





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サ ケ
Oncorhynchus keta (Walbaum)
（第十二圖版 第一圖（雄）、第二圖（雌））×1⁄4
D. 9；A. 13 to 14；scales 140.

體長は頭長の 4 倍、體高の 31⁄2 倍なり。體はマスに似、頭は稍長く吻端尖り、上顎骨は長く其後縁は眼の後方に達す。鰓耙の數少なく且粗雜なり。尾柄部は僅に細長し。體色背部は暗青色にして下方は淡く、體に斑點なし。産卵時期には雌の兩顎甚だ突出し、所謂鼻曲りとなり、背面は黄黒色を呈し、體側には赤色の斑紋を現はす。體長 900 耗に達す。本種は北海道に多く本土太平洋岸にては利根川以北及び日本海沿岸一帯に分布す。十月より翌年一月迄の間に河川に溯上し、砂礫の河底に産卵す。卵より孵化したる稚魚は四、五月頃海に下り海中にて成育し約四年にて成魚となる。本種は本邦産サケ屬中最も産額多く經濟上重要なものなり。

カラフトマス
Oncorhynchus gorbuscha (Walbaum)
（第十二圖版 第三圖） ×1⁄3
D. 11；A. 15；scales 185 to 217.

體は稍細長く、鱗は小なり。秋季に至れば成熟せる雄は體甚だ側扁し、背部著しく高まり兩顎は長く突出し且彎曲し、犬齒を具へ其狀第三圖に示すが如し。之れを俗にセツバリマスと稱す。體色背部は青く、腹部銀白色にして背部及び尾部には、多くの大なる楕圓形の黒點を有し、尾鰭に於けるものは特に大なり。マス類中小形のものにして 350 耗を越えず。本種は北太平洋に産し、我國にては北海道北部より樺太に多し。七月頃河に溯上す。

マス
Oncorhynchus masou (Brevoort)
（第十二圖版 第四圖） ×1⁄3
D. 14 to 15, A. 14 to 15, scales 125 to 130.

體長は頭長の 4 倍或は 41⁄2 倍、體高の 31⁄2 倍なり。頭長は尾柄の高さの 31⁄3 倍、吻端の 42⁄3 倍、眼徑の 7 倍なり。體形鮭に類似すれども、吻は短く且鈍形なり。背鰭起部は稍前方に始まり、鱗は稍小さく、尾柄は太く短し。兩顎齒は稍小さく、鋤骨及び口蓋骨に小なる數齒あり。鰓耙は比較的短く又其の數少なし。體色背部は暗青色、下方は銀白色なり。背部に小黒點散在す。體長 600 耗に達す。本種は北日本全體に産すれども特に北部に多し。六月頃溯河し、十月より十一月に至りて上流に達して産卵す。一尾の卵數は親魚の大小に依り異り 1000 乃至 2000 粒程あり。本邦産鮭鱒類中重要な種なり。

ベニマス
Oncorhynchus nerka (Walbaum)
（第十二圖版 第五圖） ×1⁄4
D. 11；A. 14 to 16；scales 130.

體長は頭長の 4 倍、體高の 41⁄6 倍なり。頭長は吻長の 41⁄3 倍、眼徑の 42⁄3 倍なり。體はマスに似稍細長し。上顎骨は稍小にして眼の後縁を越えて延長せり。齒は甚だ小にして、鋤骨には弱き 6 個の齒あり。鰓耙は甚だ長く且數多く 37 あり。鱗は大なり。肉は深紅色なり。産卵時期に至れば雌の上下顎は著しく彎曲す。體色背部は鮮青色にして體側は銀白色なり。背部に黒點あるものと存在不明瞭なるものとあり。産卵時期に至れば雌雄共に血紅色となる。體長は 600 耗に達す。本種はカムチャツカ、アラスカ其他北米太平洋岸に多く産し、日本には甚だ少く唯擇捉島に産するのみ。本種は上流に湖水を存する河川を擇びて溯上する性あり。産卵は湖水に注ぐ河川に上り之れを行ふ。稚魚は 2 年間湖水に棲息し、後海に下る。溯河時期は六月より七月にして産卵は九月より十月に於て行はる。肉は紅色にして美味なり。罐詰として最も價値あり。

マスノスケ
Oncorhynchus tshawytscha (Walbaum)
（第十二圖版 第六圖） ×1⁄3
D. 11；A. 14 to 17；scales 146.

體は肥大し、頭は稍尖がれり。上顎骨は細長く眼を越えて稍延長せり。眼は甚だ小なり。上下顎骨の齒は甚だ小さし。體色背部は暗青色、腹面銀白色を呈し、背部背鰭及び尾鰭には小黒點を密布せり。體長 1500 耗に達す。我國に於ては北海道北部に於て稀に漁獲さる。露領カムチャツカ、米國太平洋岸並にカナダ沿岸、アラスカに多く、鮭屬中最も大形のものにして、味ひ佳良なり。

Oncorhynchus keta (Walbaum)
“ Sake ”
PL. XII, fig. 1. male, fig. 2. female. ×1⁄4
D. 9；A. 13 to 14；scales 140.

Length of body equal to about 4 times that of head, and about 31⁄2 times depth of body. Body oblong in shape；head somewhat elongated. Maxillary long, extending considerably beyond posterior margin of eye. Gill rakers 20 to 25 in number and coarse. Caudal peduncle slender and long. Body dark indigo above and paler below；body without defined spots；edges of fins somewhat darker than body. At spawning season, back becomes darker and appears brick red on sides. Body reaches a length of 900 mm. This is the commonest of the salmonoid species occurring in Japan, being principally distributed on the north-eastern part of the coast. It ascends the rivers, where it spawns during the season, which extends from October to January, and then perishes from exhaustion. The fry descends the river in June, and grows in the sea where it spends about 4 years, at the end of which it has matured.

Oncorhynchus gorbuscha (Walbaum)
“ Karafutomasu ”
PL. XII, fig. 3. ×1⁄3
D. 11；A. 15；scales 185 to 217.

Body somewhat slender and covered with very small scales. In Autumn body of the full-grown male becomes very compressed, with a very high hump above the shoulder, the jaws being much elongated and conspicuously hooked, with very strong canines in front. Body blue above, with a silvery lustre on the sides；back and tail with numerous large oblong black spots, those on caudal fin being very large. Average length 380 mm. This species is found on the coasts and in the streams of the northern Pacific；in Japan it occurs from Saghalien southwards to north-eastern Hokkaido. It ascends the streams of north-eastern Hokkaido in July.

Oncorhynchus masou (Brevoort)
“ Masu ”
PL. XII, fig. 4. ×1⁄3
D. 14 to 15；A. 14 to 15；scales 125 to 130.

Length of body equal to about 4 to 41⁄2 times that of head, and about 31⁄2 times the greatest depth of body；length of head equal to about 31⁄6 times depth of caudal peduncle, 32⁄6 times length of snout, and 7 times the diameter of eye. Body sub-similar in shape to that of *O. keta* (Walbaum), but snout shorter and blunter, and insertion of dorsal fin more anterior. Gill rakers comparatively short and 18 in number. Body dark blue above, silvery white on the sides. Length 600 mm. This species is widely distributed throughout Japan, being especially abundant in the

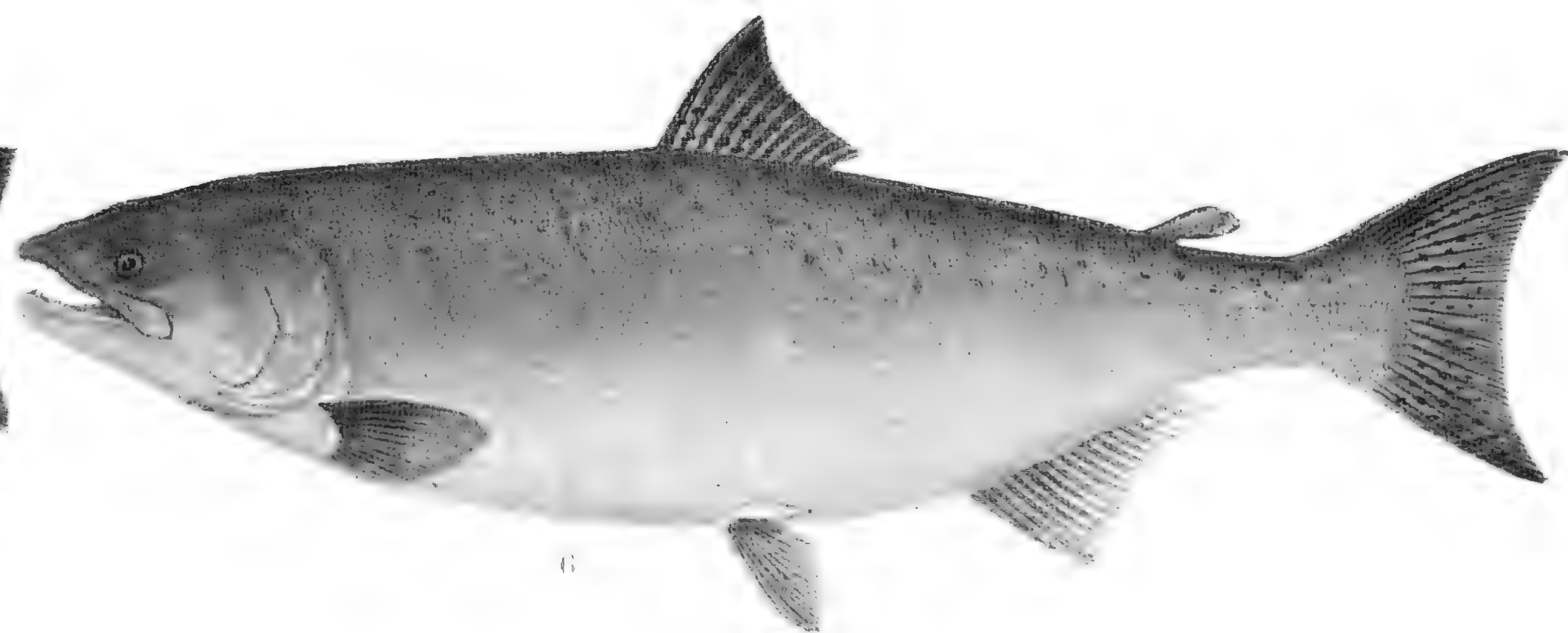
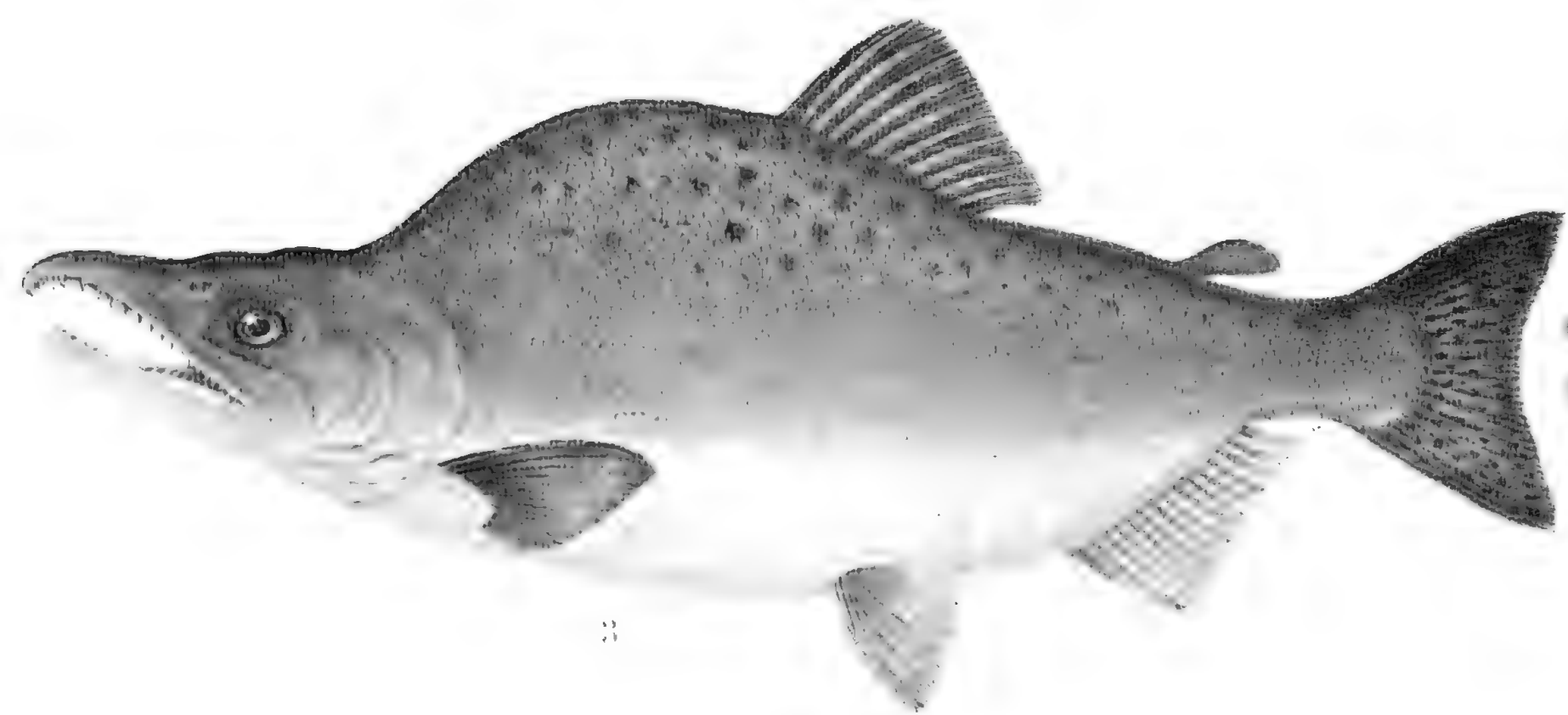
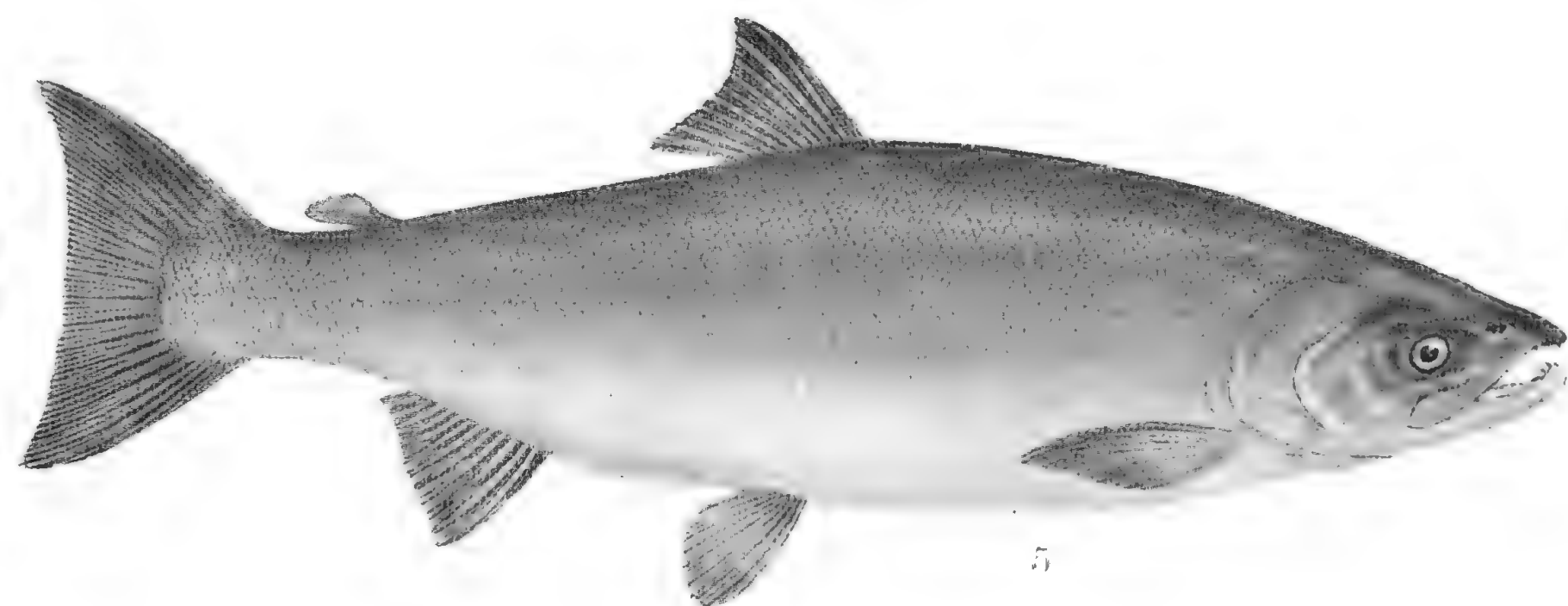
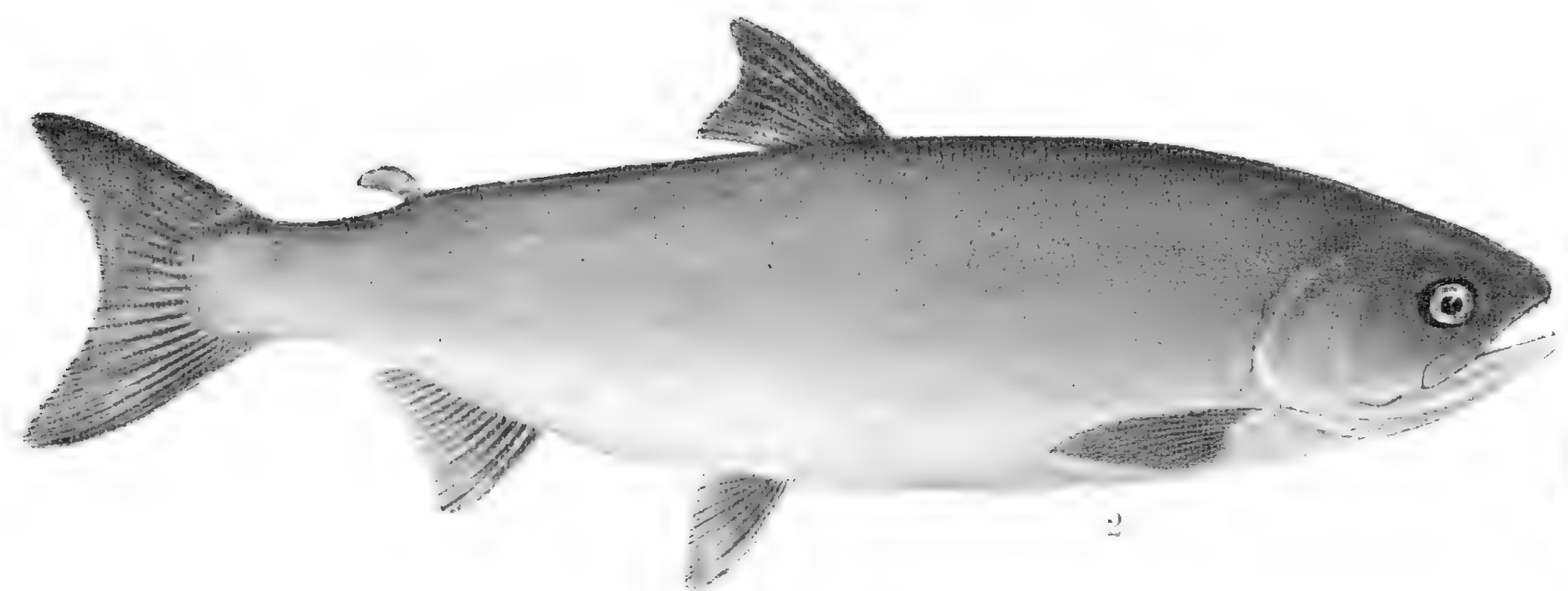
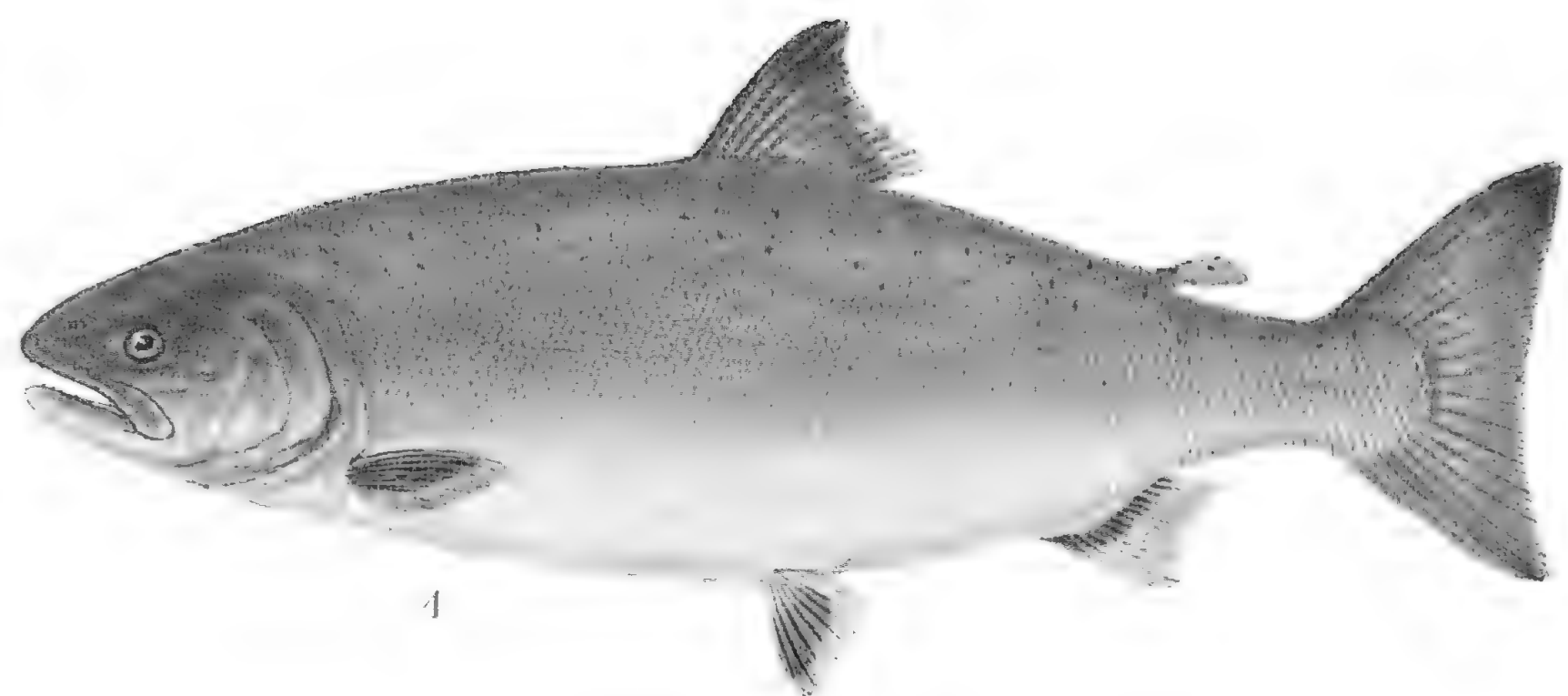
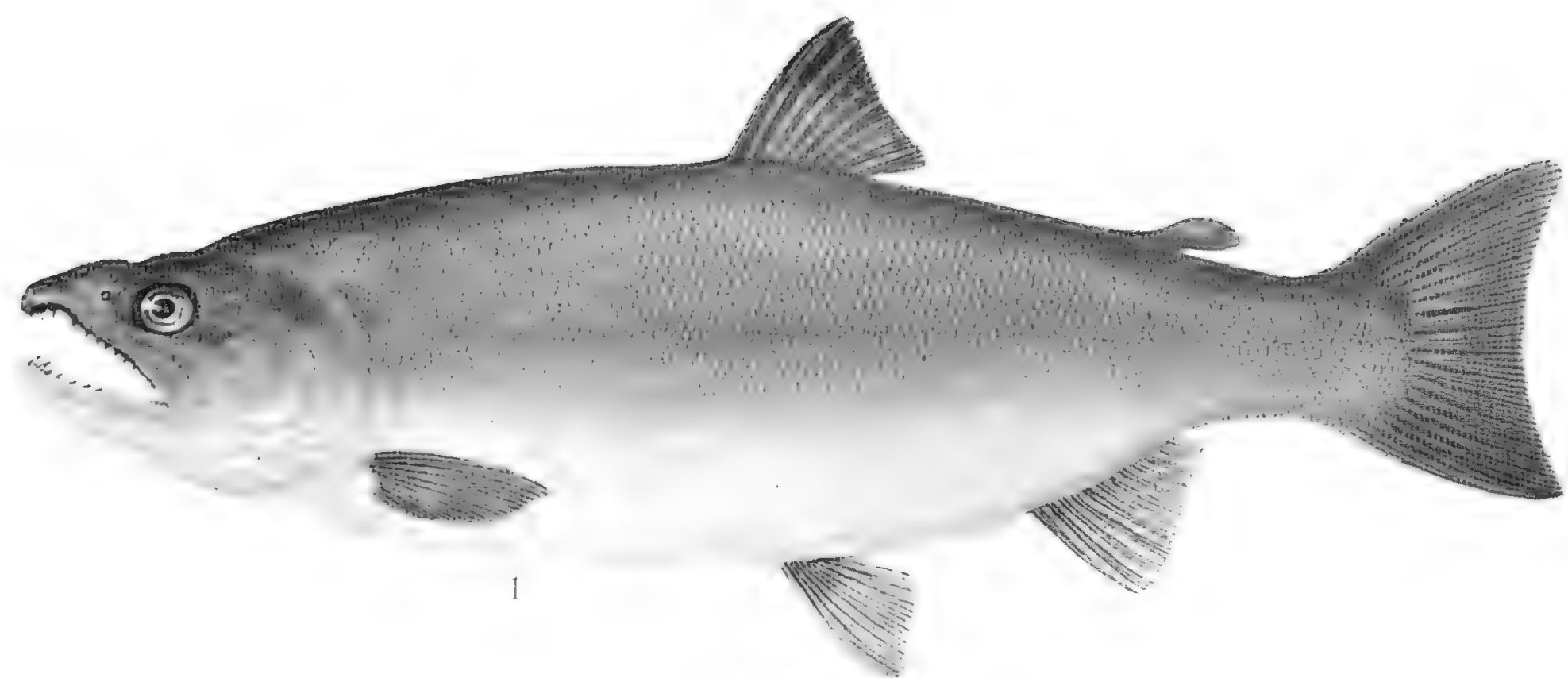
northern region. It goes up mountain rivers and streams in June, spawning in October and November.

Oncorhynchus nerka (Walbaum)
“ Benimasu ”
PL. XII, fig. 5. ×1⁄4
D. 11；A. 14 to 16；scales about 130.

Length of body equal to about 4 times that of head, and 41⁄6 times depth of body, length of head equal to 41⁄2 times that of snout, and 42⁄3 times the diameter of eye. Body elliptical n shape and somewhat slenderer than that of *O. keta* (Walbaum). Maxillary rather small, extending beyond eye. Teeth very small；vomer having about six weak teeth. Gill rakers very long and numerous. Flesh deep-red in colour. At spawning season male has an extravaganly hooked jaw. Body bright blue above and with a silvery lustre on the sides. The full-grown fish is without spots in spring, the young having very faint black spots on back. At the spawning season, it becomes dark red. Length about 600 mm. Found only in Etorofu island, Hokkaido, in Japan. During June and July this fish ascends streams that have lakes at their headwaters, and the spawning takes place during the period from September to October.

Oncorhynchus tshawytscha (Walbaum)
“ Masunosuke ”
PL. XII, fig. 6. ×1⁄6
D. 11；A. 14 to 17；scales 146.

Body corpulent and head rather pointed；maxillary rather slender, reaching beyond eye. Eye and teeth rather small；vomerine teeth weaker than that of jaws, disappearing in males. In late Summer, jaws of males are produced and distorted and anterior teeth much enlarged, body then becomes deeper, more compressed, and arched at shoulder. Ventral fins beginning behind middle of dorsal fin. Body dark blue above and silvery below, the back, dorsal and caudal fins being profusely covered with small round spots. Body attains a length of 1500 mm. This species is seldom found in northern Hokkaido. It ascends large streams in Spring and Summer, spawning in October and November.





アメノウオ
 <div>Oncorhynchus masou (Brevoort)</div>
<div></div> <div>（第十三圖版 第一圖）×1/2</div>
D. 12; A. 14; scales 133.

體形マスと同じく、頭は稍短く尖端鈍形をなし、上顎骨の後縁は眼の後縁を超ゆ。尾鰭後縁は浅き半月形を呈す。體色背部は帶青綠色にして小黑點を散布し、此の黒點は背鰭、脂鰭、尾鰭等にも分布せり。體長650 耗に達す。産卵期は十一月の頃なり、發生後滿3 年にして成熟す。湖水に常棲するマスにして特に琵琶湖に多く、同地方にては湖水産マスの大形のものをアメマスと稱す。

イトウ
 <div>Hucho perryi (Brevoort)</div>
<div></div> <div>（第十三圖版 第二圖）×1/2</div>
D. 10; A. 9; scales 109.

體長は頭長の3 1/2 倍、體高の5 倍なり。頭長は吻長の4 倍、眼徑の5 倍なり。體は長く延び、鱗は稍小なり。頭は長く先端尖がれり。上顎骨は眼の後縁を超ゆ。鋤骨は「ボート」形を呈し、中軸部は深く凹みて齒なし。舌上の各縁には各1 列の鋭き齒あり。尾鰭は深く叉狀をなせり。體色背部は暗橄欖色、腹部は銀白色なり。頭部及び軀幹には小兩色點密布せり。體長600 耗に達す。本種は北日本及び北海道の溪流に分布す。四月頃河の上流に向つて溯河し、九月より十月に亘りて産卵す。

アユ
 <div>Plecoglossus altivelis Temminck & Schlegel</div>
<div></div> <div>（第十三圖版 第三圖(雌)，第四圖(雄)）×1</div>
D. 10 to 11; A; 14 to 16; scales 153.

體長は頭長に4 3/5 倍、體高の4 1/2 倍なり。頭長は尾柄の高さの2 1/5 倍、眼徑の5 倍、吻長の2 5/6 倍に達す。體は稍長く、鱗は甚だ小なり。稚魚は上下兩顎骨に鋭き齒を有すれども、成長すれば是等の齒を失ひ、顎骨の外縁にある皮膚中に並列せる扁平なる板狀の齒を生ず。前上顎骨の前部に小數の犬齒を具ふ。體色背部は淡褐黃色にして下方白色なり。鰓孔の後方體側には1 黃紋あり。雄は雌に比し各鰭大きく唯雌の臀鰭軟條は雌のものより長し。體長大なるは300 耗に達す。北海道南部より臺灣淡水迄分布し、朝鮮にも産す。十月より十一月に亘り河川の中流の瀬に集りて産卵す。卵は砂礫に粘着し、孵化兒は海に下り冬期を經過す。三月に至れば70 耗となり再び川に上り、次第に成長し秋季に至りて成魚となる。本邦淡水魚類中最も價格高きものにして芳香、味ひ佳絶なり。

ワカサギ
 <div>Hypomesus olidus (Pallas)</div>
<div></div> <div>（第十三圖版 第五圖）×1</div>
D. 8 to 9; A. 16; scales 57.

體長は頭長の4 1/2 倍、體高の5 1/4 倍なり。頭長は吻長の3 1/5 倍、眼徑の3 1/6 倍なり。體は長く、稍大形の薄鱗を以て被はる。口は稍小にして、上顎骨は鰓孔の中央下迄延長せり。齒は小さく、兩顎、鋤骨、口蓋骨、翼上骨及び舌上にあり。腹鰭は背鰭の第一軟條下或は其れよりも稍前方に始まる。體色背部は淡黃色にして下方は銀白色を呈す。體側には幅廣き1 淡黒縦線あり。體長110 耗に達す。北日本に多きも近來南日本の各湖沼に移殖し、以來大に蕃殖せり。産卵期は一、二月にして、川に溯上し、又は湖中にて産卵す。1 尾の抱卵數は約 5000 粒あり。

キウリウオ
 <div>Osmerus dentex Steindachner</div>
<div></div> <div>（第十三圖版 第六圖）×1/2</div>
D. 10; A. 15; scales 70.

體長は頭長の4 倍、體高の6 倍なり。頭長は吻長の3 1/2 倍、眼徑の5 倍なり。體は細長く側扁す。頭は長く先端尖がれり。口は大きく下顎は上顎より稍長し。上顎骨は眼窩の後縁下に達す。上下顎骨には小齒あり。舌上先端には強き數齒、鋤骨の前縁には2 乃至4 個の大なる齒、口蓋骨、舌骨及び翼上骨に1 小齒列あり。背鰭は體の稍中央部に始まる。體長200 耗に達す。體色背部は淡褐色にて腹面白し。本種は北海道北部及びアラスカに産す。五月の候河口に來りて産卵す。

シラウオ
 <div>Salangichthys microdon Bleeker</div>
<div></div> <div>（第十三圖版 第七圖）×1</div>
D. 11; A. 23.

體長は頭長の6 倍、臀鰭起部に於ける體高の8 1/2 倍なり。頭長は吻長の3 1/10 倍、眼徑の4 5/6 倍に達す。體は著しく延長し、透明にして、前方は圓筒形、後方は側扁せり。特に雄に於ては著しく側扁す。雌は雄より細長し。頭部は稍短く、扁平にして先端尖がれり。下顎は上顎より稍長く、上顎骨は眼窩の前縁に達す。雌は全く無鱗なるも第一背鰭は體の 1/6 後方に始まる。尾鰭は深く叉狀を呈す。胸門垂及び鰓を缺く。體は白色透明にして、腹面に沿ひ2 列の小黑點走れり。體長100 耗に過ぎず。日本各地の沿岸に産すれども、特に東京灣、岡山縣、三重縣に多し。四月より五月に亘り河に上り産卵す。卵は葦其の他の水草に粘着さる。 1 尾の産卵數は約 2000 粒に達す。

Oncorhynchus masou (Brevoort)
“Amenouwo”
PL. XIII; fig. 1. ×1/2

D. 12; A. 14; scales 133. Length of body equal to 3 5/7 times depth of body, and to 4 times length of head. Body oblong and compressed. Jaws long and upper jaw overlaps lower; maxillary extends scarcely beyond eye. Caudal fin slightly emarginated. Gill rakers short and 17 to 20 in number. Body bluish-green above, covered with numerous small black spots, which also occur on dorsal, adipose, caudal fins; pectoral, ventral and anal fins have rather faint black spots on them. Length of body attains to 650 mm. This fish is the landlocked form of *Oncorhynchus masou* (Brevoort), and is abundantly found in Lake Biwa, where the adult is specially called “Amenouwo”; it averages 400 mm. in length and 1 kg. in weight. Recently, this fish h s been successfully transplanted to other mountain lakes in Japan.

Hucho perryi (Brevoort)
“Ito”
PL. XIII, fig. 2. ×1/2

D. 10; A. 9; scales 109. Length of body equal to 3 1/2 times that of head, and to 5 times depth of body; length of head about 4 times that of snout, and 5 times diameter of eye. Body elongated and slender, covered with somewhat small scales; head long and pointed at tip; maxillary extending a little beyond eye; vomer boatshaped, its shaft strongly depressed, and without teeth; tongue has a row of sharp teeth on each edge. Caudal fin deeply forked. Colour of body dark above and silvery below, head and body profusely covered with small brown spots. It attains to 600 mm. in length. This species is distributed in streams of northern Japan, especially in Hokkaido. It ascends rivers in April, and spawning take place from September to October.

Plecoglossus altivelis Temminck & Schlegel
“Ayu”
PL. XIII, figs. 3. (male), fig. 4. (femal) ×1

D. 10 to 11; A. 14 to 16; scales 156. Length of body equal to 4 3/6 times that of head, and to 4 1/2 times depth of body. Body moderately elongated and covered with very small scales. Head somewhat small and snout pointed. Maxillary extending somewhat beyond eye. Young has canines in jaws disappearing with age, but adult has very broad, short teeth seated in folds of skin. Male differs from female, in having dorsal and pectoral fin rays longer, and anal fin rays shorter than hers. Colour of body light brownish-yellow above and silvery below, and with a yellow bar on the area posterior to the gill opening. Body attains to 300 mm. in length. This species is distributed from Hokkaido to Formosa and also to Korea. It spawns from September to November in the middle course of the rivers, and the fry descends the rivers to the sea, where it spends the Winter. In March the young fish ascend the rivers to the upper parts where they feed on their natural food, and grow somewhat rapidly. It is the choicest in flavour of fresh water fish in this country and is highly prized by the Japanese as a delicacy.

Hypomesus olidus (Pallas)
“Wakasagi”
PL. XIII, fig. 5. ×1

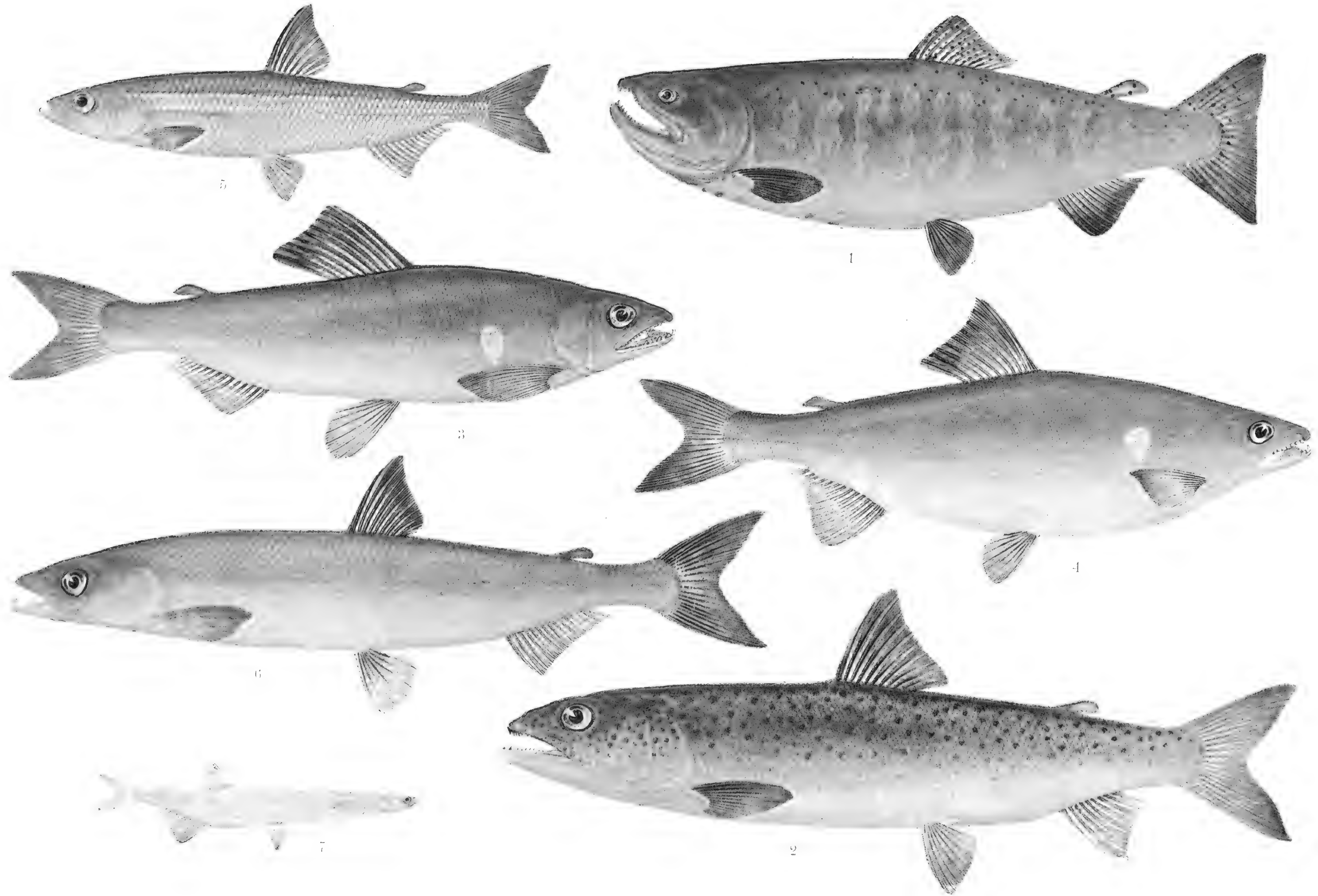
D. 8, to 9; A. 16; scales 57. Length of body equal to 4 1/2 times that of head, and to 5 1/4 times depth of body. Shape of body rather elongated and compressed, and covered with rather large and thin scales. Mouth rather small; maxillary extending to below middle of pupil; has minute teeth in jaws, and on vomer, palatines, pterygoids, and tongue. Ventral fins inserted immediately below, or anterior to, anterior rays of dorsal fin. Colour of body light-yellow above and silvery below; on lateral sides of body it has a broad darkish longitudinal band. The fish attains to 110 mm. in length. This species occurs abundantly in northern Japan, but lately it has been introduced into, and successfully acclimatized in, lakes of southern Japan. Spawning begins early in January, ending in February.

Osmerus dentex Steindachner
“Kyuri-uwo”
PL. XIII, fig. 6. ×1/2

D. 10; A. 15; scales 70. Length of body equal to about 4 times that of head, and to about 6 times depth of body. Body elongated, slender and compressed; head long and pointed at the tip; mouth large, lower jaw slightly longer than upper; maxillary extending to posterior margin of orbit. Jaws are provided with small teeth; tongue with a few strong teeth at the tip. Dorsal fin inserted near middle of body. Body attains to 200 mm. in length. Colour of body pale-brown above and white below. This species ranges from the coasts of Alaska to northern Hokkaido. Spawning takes place in May.

Salangichthys microdon Bleeker
“Sira-uwo”
PL. XIII, fig. 7. ×1

D. 11; A. 23. Length of body equal to 6 times that of head, and to 8 1/2 times depth at the insertion of anal fin. Body very elongated, translucent, cylindrical anteriorly, and compressed posteriorly, especially so in the male; females more slender than males. Head rather short, narrow and depressed above, and pointed at tip. Lower jaw somewhat longer than upper, and maxillary extends to anterior margin of orbit. Teeth arranged in a single row in jaws and on palatines, those on premaxillary being enlarged. Body entirely scaleless in the female; but in the male there is a single row of large thin scales which extend along the base of anal fin. First dorsal fin inserted on posterior third of body, before anal fin; caudal fin deeply forked. Colour of body translucent, two rows of black spots along ventral surface. It attains to 100 mm. in length. This species is found off the coast of every part of Japan. It ascends rivers during period from March to May to spawn. A valuable food fish in Japan.





ヤマメ
Oncorhynchus macrostomus (Günther)
(第十四圖版 第一圖, 第二圖) ×1

D. 15; A. 14; scales 120 to 140.

體長は頭長の 4 1/5 倍、體高の 3 2/3 倍なり。頭長は吻長の 3 1/2 倍、眼徑の 5 倍なり。體側には9個内外の大なる楕圓形の黒斑點ありて、其の上及下にも大きさ不定の同色の圓き斑紋あり。尙背面には多くの小黑點を散布し、頭部、背鰭、脂鰭及び尾鰭上葉にも之れを有する事多し。又體側に美紅色の小點を有するもの(第二圖)と、有せざるもの(第一圖)とあり。又背鰭先端の黒きものと然らざるものとあり。本種はマスの稚魚状態のものにて河川の上流區域に主に棲息す。此の中、海に下るものと終生河中に止まるものとあり。稚魚時代には兩者を區別し難し。俗にヤマメと稱するは河中に留まる期間のものを云ふ。此中、海に下り成長したるものはマスと稱す。上流に留まるものはヤマメ状態にて成魚となり十月頃産卵す。本邦全國に産す。體に赤點あるものは南部に多し。

ヒメマス
Oncorhynchus adonis Jordan & McGregor
(第十四圖版 第三圖) ×1/2

D. 10; A. 16; scales 131 to 134.

體長は頭長或は體高の4倍に等し。頭長は吻長の 3 2/10 倍、眼徑の 6 倍、尾柄の長さの 3 倍なり。體は楕圓形にして頭部及び尾部は細長し。背鰭は稍後方に始まる。鋤骨齒は小さし。舌上には2列の齒ありて各列は4乃至5個の齒よりなる。鰓耙は比較的長く且多く 31 乃至 33 あり。體色背部は帶綠色にして、腹部は銀白色なり。背部に多くの小黑圓點を有す。背鰭基底には數個、尾鰭にも多くの小黑點あり。産卵時期に至れば、全體紅色となる。體長 400 耗に達す。本種は北海道阿寒湖の原産にして、最近内地各地の湖沼に移殖され、大いに蕃殖せり。就中十和田湖、中宮祠湖に多し。十月より十一月に亘り湖水に注ぐ支流に上りて産卵す。元本種はベニマスと同種なりしも、唯海に下らず終生湖中に棲息するを以て異れり。

ニジマス
Salmo irideus (Gibbons)
(第十四圖版 第四圖) ×1/2

D. 11; A. 12; scales 145.

體長は頭長の 4 倍、體高の 3 1/5 倍、頭長は眼徑の 5 倍あり、體はマスに似、頭稍小さく、先端鈍にして口裂も狭

く、上顎骨は漸く眼の後縁下に達す。鋤骨には不規則に列生せる2列の齒あり。體は背面黃綠色にして下方銀色を呈す。背面には小黑點多し。此點は頭部、背鰭、脂鰭及び尾鰭等にも存せり。體側には幅廣き1條の赤色縦帶ありて、水中に游泳中恰も虹の如く美觀を呈するを以てニジマスと稱す。體長 900 耗に達す。本種は北米「カリフォルニア」州の山間溪流に産するものなるが、漸次諸地方に移殖せられたり。我國に始めて輸入したるは明治十年なれども一時中絶し明治四十年以後數回輸入し今日迄日本の各湖沼及び池に廣く放養せられ、其蕃殖成長等極めて良し。産卵時期は他の種類に比して遅く二月より五月に亘る。卵の孵化適溫は 5°C 乃至 15°C にして、生活水溫は 8°C 乃至 21°C なり。池中養殖魚として容易に飼養され成長甚だ良し。美味ならざれども遊漁に適せり。

イワナ
Salvelinus pulvius Hilgendorf
(第十四圖版 第五圖) ×1/2

D. 9; A. 8; scales 185.

體長は頭長の 3 2/10 倍、體高の 4 1/5 倍なり。頭長は吻長の 3 2/5 倍、眼徑の 5 1/2 倍、尾柄の高さの 2 1/5 倍なり。體はマスに似稍長く、頭部短く且鈍し。口は大きく、上下顎骨、口蓋骨、鋤骨及び舌上に齒あり。體は黃色を帶び、瞳孔大の白點散在し、又赤點を交ゆるものあり。腹鰭及び臀鰭の前縁は鮮黃色にして、腹鰭及び胸鰭の上面は稍黒し。體長 300 耗に達す。本種は本州及び北海道の溪流に産す。

カハマス
Salvelinus fontinalis (Mitchill)
(第十四圖版 第六圖) ×1/2

D. 10; A. 9; scales 230.

體長は頭長の 4 1/2 倍、體高の 4 1/2 倍なり。體はイワナに似、長楕圓形にして側扁せり。口裂は大きく上顎骨の後端は眼の後方に達す。體色背面は暗黃褐色にして、下方は黃赤色なり。體側には小赤色點を散布す。背面、背鰭、腹鰭及び尾鰭には暗黃褐色を呈せる蠕虫狀の斑紋を密生せり。胸鰭、腹鰭及び臀鰭は稍赤し。體長 500 耗に達す。此魚は元北米合衆國の東部山間溪流に産せしが漸次諸地方に移殖せり。日本には明治三十三年に始めて移殖せられ、以來各地の池沼に放養され成績甚だ良好なり。産卵時期は十一月なり。發生後3年にて成熟す。

Oncorhynchus macrostomus (Günther)
“Yamame”
PL. XIV, figg. 1, 2. ×1

D. 15; A. 14; scales 120 to 140.

Length of body equal to 3 1/2 to 4 times that of head, and to 3 2/3 times depth of body; length of head equal to 3 1/2 times that of snout, and to 5 times diameter of eye. Body with about 9 parr marks on sides, above and below which there are a good many round dark spots; it is also profusely sprinkled with small black spots; occasionally there are similar spots on head, dorsal and adipose fins, and also on upper lobe of caudal and along base of dorsal fin; some specimens are adorned with small bright-reddish spots on back and sides. This species is found in mountain-streams all over Japan. The red spotted species distributed principally in the southern parts of Japan, especially in mountain-streams draining to Pacific coast. Fig. 2 shows a specimen with red spots, while the fish shown in fig. 1 has none. Both forms commonly known as “Yamame” in Japan which is considered by most authors landlocked form of the “Masu” (Pl. XII, fig. 4).

Oncorhynchus adonis Jordan & McGregor
“Hime-masu”
PL. XIV, fig. 3. ×1/2

D. 10; A. 16; scales 131 to 134.

Length of body equal to 4 times that of head, and to about 4 times depth of body. Body elliptical in sbape, and slender in head and tail. Dorsal fin beginning rather posteriorly. Gill-rakers comparatively long and numerous. Body greenish above, with many small round black spots; dorsal with several spots at base; caudal fin with many spots. During Summer, body is silvery all over, but at spawning season, the mature fish assumes light a crimson-red colour along side of body. Attains to a length of 400 mm. Formerly this species was found only in Lake Akan, Hokkaido, but recently it has been successfully introduced into and acclimatised in almost all mountain lakes in Japan This species is a landlocked form of the red salmon. Spawns in October and November.

Salmo irideus (Gibbons)
“Nidimasu”
PL. XIV, fig. 4. ×1/2

D. 11; A. 12; scales 145.

Length of body equal to 4 times that of head, and to 3 1/3 times depth of body. Body oblong and compressed, covered with rather large scales compared with other salmon. Head rather short, blunt, convex and obtusely ridged above. Mouth moderate; maxillary scarcely reaching beyond eye.

Vomer with two irregular series of teeth. Body bluish-green above, silvery below, back of body profusely spotted; sides of body, head, and also ventral fins spotted. At spawning season there appears a broad reddish band along sides, which extends from the end of opercle to base of caudal fin; jaws, cheeks and opercles are reddish. It attains to a length of about 900 mm. and a weight of 2.5 kg.. This species was introduced to Japan from a stream in California, U.S.A., in 1877, and is now widely cultured in ponds and streams. Spawning season is a period ranging from Feburary to May.

Salvelinus pulvius Hilgendorf
“Iwana”
PL. XIV, fig. 5. ×1/2

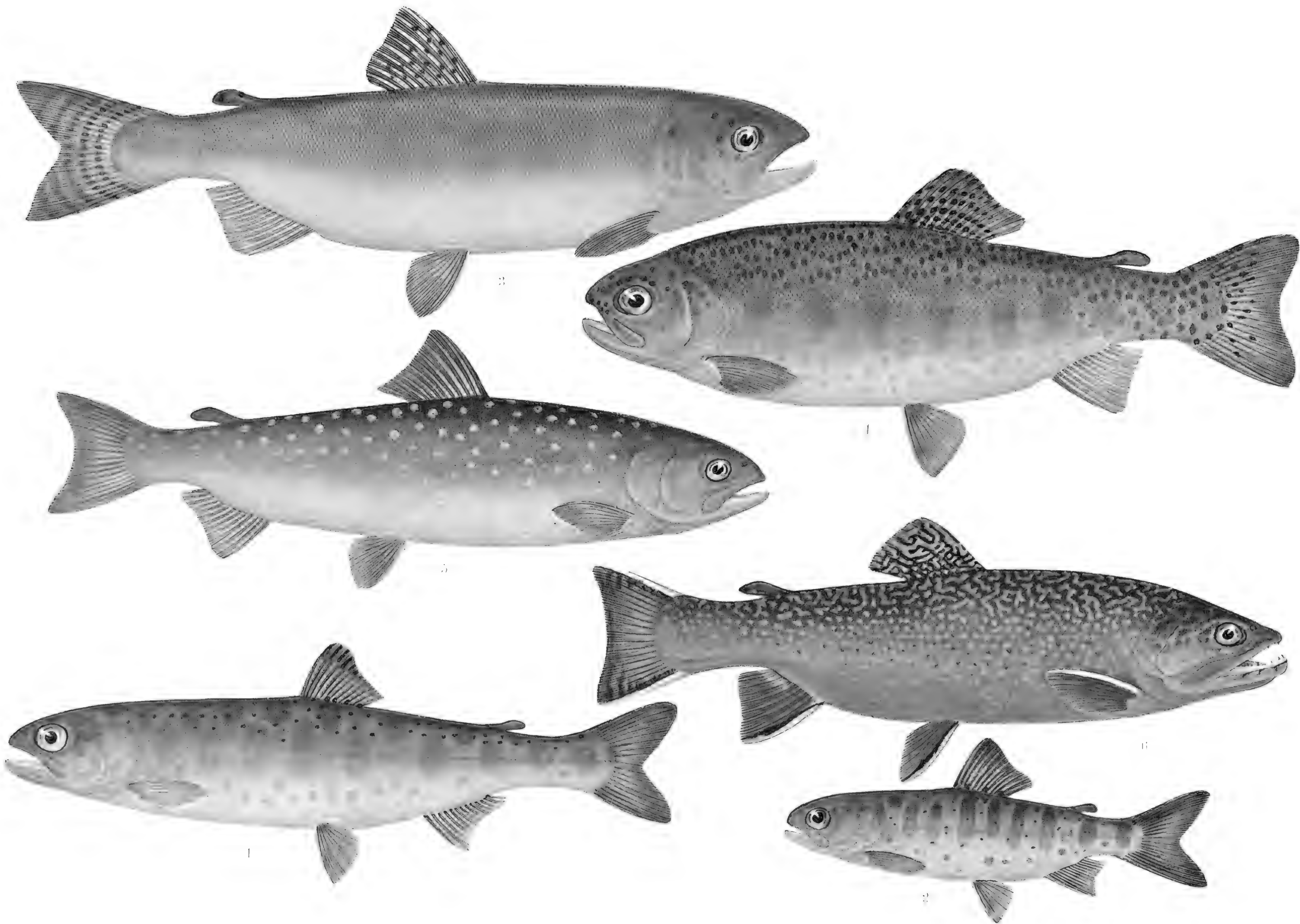
D. 9; A. 8; scales 185.

Length of body equal to 3 2/10 times that of head, and to 4 1/5 times depth of body. Body rather elongated, moderately compressed; head rather short and blunt. Mouth large; teeth of jaws very small. Body has numerous light spots above as large as pupil of eye; anterior edges of ventral and anal fins bright yellow, and upper surface of ventral and pectoral fins somewhat dusky in colour. Fish attains to a length of 300 mm. This species is abundant in mountain streams in Japan.

Salvelinus fontinalis (Mitchill)
“Kawamasu”
PL. XIV, fig. 6. ×1/2

D. 10; A. 9; scales 230.

Length of body equal to 4 1/2 times that of head, and to 4 1/2 times depth of body. Body rather stout, oblong and compressed. Mouth large, maxillary extending beyond eye. Body dark olive-green above and reddish-yellow below; sides of body paler than back and scattered with small red spots; back and dorsal, adipose, and caudal fins vermiculated with dark-olive or black; pectoral, ventral, and anal fins reddish. Length about 500 mm. This species was introduced into Japan from the United Sates in 1900, and now is widely distributed. Spawning season is November.



ゴ ン ス イ
 <div>Plotosus anguillaris Lacépède</div>
<div></div> <div>（第十五圖版　第一圖）×¹/₂</div>
D. I, 5, 80；A. 68；P. I, 10；V. 12.

　體長は頭長の3 ¹/₃ 倍，體高の5 ³/₄ 倍，頭長は眼徑の5 ³/₄ 倍，體は稍長く胴部は前方に於て肥厚せり．頭は大形にして縦扁し吻は廣く圓形をなして扁平なり，齒は粗雜にして鈍し　第一背鰭棘長く前方鋸齒狀をなし，若し之に刺さるれば甚だしく疼痛を感ず．胸鰭棘と共に直立せしめ其時特有の摩擦音を發す．背鰭，臀鰭は長く延びて尾鰭と連絡せり．體の上面は褐色にして，體側に2本の黃線あり．體長200 耗に達し岩礁近く，或は砂底等に群居す．

ナ マ ス
 <div>Parasilurus asotus (Linné)</div>
<div></div> <div>（第十五圖版　第二圖）×¹/₂</div>
D. 1, 5；A. 1, 80.
體は長く頭部は大きく且つ扁平なるも尾部に向ひ次第に細く且つ左右の幅を減ず．吻端は上面より見れば幅廣く鈍形にして口は大きく上下顎骨には絨毛狀の齒を有す．又口の上下に左右1對の長き鬚あり．背鰭は小さく臀鰭長く尾鰭に達す．皮膚に鱗なく側線明かなり．體色は棲息場に依り異り黃赤，蒼黒，淡黃又は淡褐色等あり．體長普通400 耗，體重1 匁あるも，稀には1200 耗，體重15 匁に達す．淡水魚にして淺き泥底の河湖等に産し，頗る貪食なり．

ギ ギ
 <div>Pseudobagrus aurantiacus (Temminck & Schlegel)</div>
<div></div> <div>（第十五圖版　第三圖）×²/₃</div>
D. I, 7；A. 20.
體長は頭長の5 倍あり，頭は幅廣く扁平にして吻は短く前端鈍形を爲す．背鰭の後に脂鰭を有す．背鰭と胸鰭の前部には強き棘ありて其下縁鋸齒狀を爲す．前後の鼻孔は相離れ其後部のものに鬚を有す．上顎に1對，喉部に2對の鬚あり．尾鰭の後端凹形を爲さず．體面は滑かにして鰭なし．體色は背部黒褐にして腹部は白し．體長300 耗體重150 匁に達す．淺き河湖に産し貪食性を有す．産卵期は五月頃なり．琵琶湖に多し．

ア ユ モ ド キ
 <div>Hymenophysa curta (Temminck & Schlegel)</div>
<div></div> <div>（第十五圖版　第四圖）×²/₃</div>
D. 11；A. 7.

　體は長く體高の4 倍，頭長の3.6 倍あり．口は小さく下部に存し其周圍に6本の鬚あり．體は細かき鱗にて被は

る．背部は蒼黒にして紅青の光彩を有し黒色の班紋あり．

　體長150 耗に達す．淡水魚にして主に琵琶湖に産し淺き泥底の處に棲息す．

ド ジ ヨ ウ
 <div>Misgurnus anguillicaudatus (Cantor)</div>
<div></div> <div>（第十五圖版　第五圖）×1</div>
D. 9；A. 7, to 8；scales 143 to 154.
體は丸形にして長く小鱗にて被はる．口は小さく其周圍に10本の鬚あり．内4本は下顎にあり．背鰭と臀鰭は短かく尾鰭の後端は圓し．背部は暗褐色にして黒點散在す．腹部は黄色を帶ぶ．體長200 耗，體重40 匁に達す．雄は雌に比し小形にして體側に隆起あり．産卵期は春夏の候なり．淡水魚にして我國全體に産し，淺き泥底に棲息す．

シ マ ド ジ ヨ ウ
 <div>Cobitus biwae Jordan & Snyder</div>
<div></div> <div>（第十五圖版　第六圖）×1</div>
D. 8；A. 7.
體は長くドジョウに似其長さは體高の6 倍，頭長の4.7 倍あり．口は小さく，周圍に六本の鬚あり．眼窩の下部に棘あり．體は小鱗を被むる．背部は黃褐，腹部は白く體側並に背鰭，臀鰭に黒點並列す．體長100 耗に達す．産卵期は六月頃なり．淡水魚にして淺き砂泥の處に棲息す．琵琶湖に多し．

マ エ ソ
 <div>Saurida argyrophanes (Richardson)</div>
<div></div> <div>（第十五圖版　第七圖）×²/₃</div>
D. 11；A. 10；scales 54.

　體長は頭長の4 ¹/₄ 乃至4 ¹/₃ 倍，體高の7倍乃至9倍あり．體は長く圓筒形にして體長400 耗に達するを以てエソ科中最大なるものなり．頭部長く縦扁し口は大きく斜位にして眼の遙か後方に達す．齒は細小にして兩顎及舌上に多數にあり．口蓋骨に2列あり．背鰭起部は尾鰭起點よりも吻端に近く胸鰭後端の後方なり．脂鰭小さく臀鰭最後軟條の上方にあり．鱗は稍大きくエソ科の他種に比し堅く離脱し難し．體色背部は暗褐色下方銀黃色，背鰭胸鰭及尾鰭の先端淡黒色なり．本邦沿岸に廣く分布し50—60 米の砂底に棲息し底引網にて多く漁獲され九州，朝鮮沿岸に多し．上等蒲鉾材料に用ゐらる．

Plotosus anguillaris Lacépède
“Gonzui”
PL. XV, fig. 1. × ¹ / ₂
D. I, 5, 80；A. 68；P. I, 10；V. 12.
Length of body equal to 3 ¹ / ₃ times that of head, and to 5 ³ / ₄ times depth of body；length of head equal to 7 ¹ / ₂ times diameter of eye. Body elongated, compressed, trunk thickest in front, and tail rather long and tapering. Body perfectly smooth and without scales. Head large, broad, depressed, when viewed from above；snout broadly rounded and flattened；eyes small, mouth very broad；upper jaw the longer；teeth in jaws rather few, large, coarse, with blunt ends, jaws with 8 barbels, consisting of 2 nasals, 2 maxillaries, and 4 mentals. First dorsal spine very strong, its anterior edge serrated above；second dorsal and anal fins long and joined to caudal fin. Pectoral spine similar in form to that of first dorsal, and with outer edge serrated. Colour of body dark-brown on back, pale on abdomen, two yellow lines along sides from head to caudal portion. This species abounds on shallow sandy coasts throughout southern Japan, its range extending to the Red Sea. It attains to about 250 mm. in length. It is not esteemed as food, being consumed by fishermen only. This fish is a nuisance to fishermen as its sharp spines are the source of much trouble during fishing operations.

Parasilurus asotus (Linné)
“Namazu”
PL. XV, fig. 2. × ¹ / ₂
D. 1, 5；A. 1, 80.
Body elongated and compressed, tapering towards tail；head large, depressed and broad；snout blunt viewed from above. Mouth large, with villiform teeth on both jaws, which have two pairs of long barbels, those of upper jaw being much the longer. Dorsal fin short；anal long, reaching to caudal. Body has no scales；lateral line distinct. In colour it varies with locality, being yellowish-red, bluish-black, yellowish-white or pale-brown, with irregular mottlings on the sides. It grows to a length of 300 to 450 mm. and a weight of 1 kg., it may attain 1200 mm. in length and 15 kg. in weight but rarely. A valuable fresh-water fish, distributed throughout Japan. A very greedy and voracious fish.

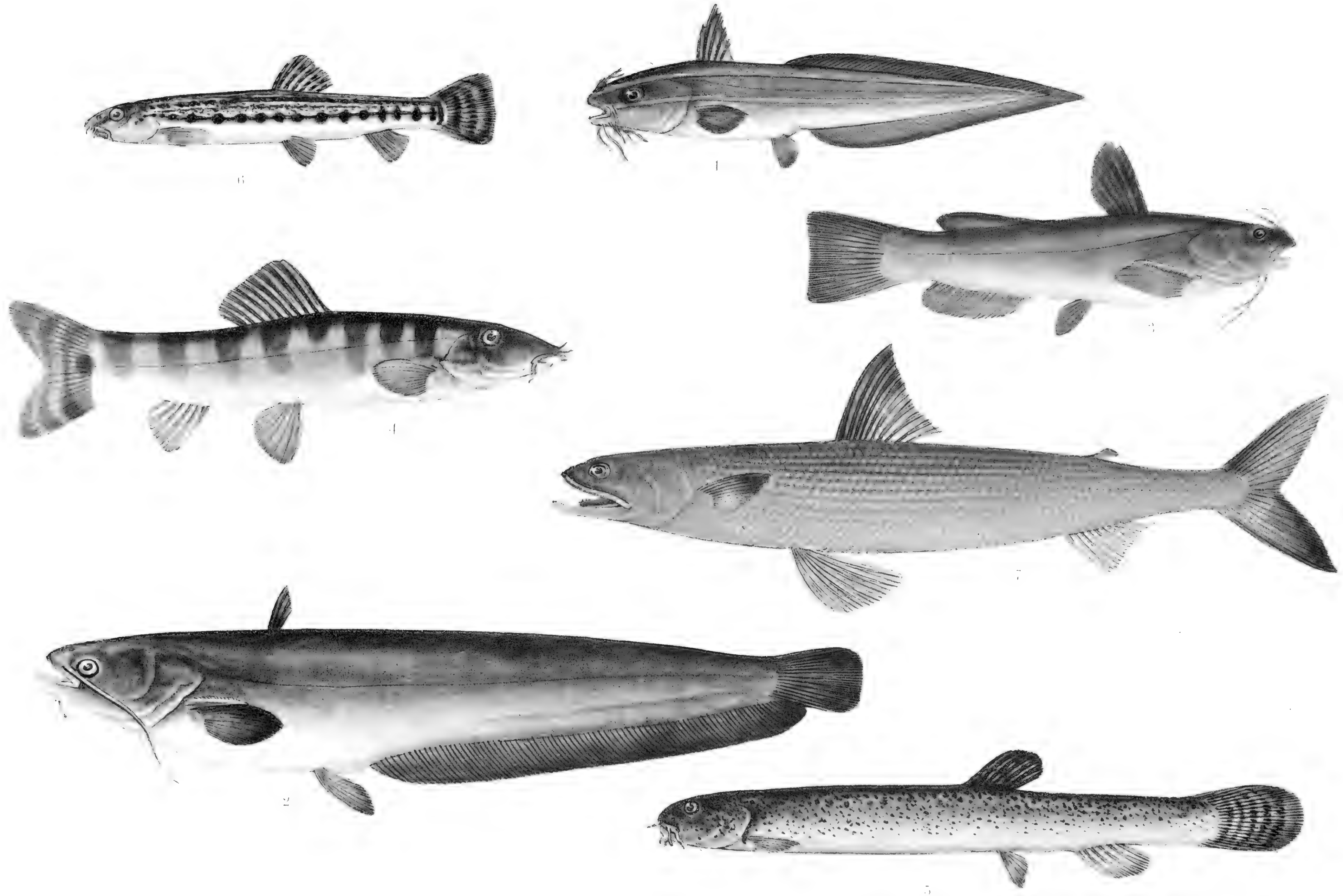
Pseudobagrus aurantiacus (Temminck & Schlegel)
“Gigi”
PL. XV, fig. 3. × ² / ₃
D. I, 7；A. 20.
Body elongated；length equal to 5 times that of head, which is broad and depressed；snout short, bluntly rounded when viewed from above. Adipose fin well-developed；dorsal and pectoral fins with spines anteriorly, that of the latter being stronger and serrated behind. Nostrils remote from each other, the posterior being furnished with a barbel, besides this one three more pairs of barbels are present around mouth, one pair being on upper jaw and the others on chin. Caudal truncated. Body and head covered with skin, smooth and scaleless. Body attains to 300 mm. in length and to 150 gr. in weight. Colour is dark-brown above, white below. This fish haunts shallow fresh-water streams or lakes in Japan and spawns in May. It is a very voracious and carnivorous fish.

Hymenophysa curta (Temminck & Schlegel)
“Ayumodoki”
PL. XV, fig. 4. × ² / ₃
D. 11；A. 7.
Body elongated, compressed, length equal to 3.6 times that of head, and to 4 times the depth. Mouth small, situated inferiorly, and surrounded by 6 barbels. Body covered with small scales. Back dark-blue, mottled with dark blotches. The fish attains to 150 mm. in length. It occurs in Lake Biwa, near Kyôto, preferring muddy bottoms.

Misgurnus anguillicaudatus (Cantor)
“Dozyô”
PL. XV, fig. 5. ×1
D. 9；A. 7 to 8；scales 143 to 154.
Body elongated and covered with small scales. Mouth small and surrounded by ten barbels, four of which belong to the mandible. Dorsal and anal fins short；caudal rounded. Back is dark-brown, irregularly sprinkled with black spots；abdomen yellowish. It attains to 200 mm. in length, and to a weight of 40 gr.；male is always smaller than female. Spawning season is from Spring to Summer. Lives in fresh-water lakes or streams on shallow muddy bottoms throughout Japan.

Cobitis biwae Jordan & Snyder
“Simadozyô”
PL. XV, fig. 6. ×1
D. 8；A. 7.
Body elongated, compressed, length equal to 4.7 times that of head, and to 6 times the depth. Mouth small and adorned with six barbels. There is an erectile spine below the eye；body is covered with small scales. Back is yellowish-brown, abdomen white, dotted with black spots along side and also on dorsal and caudal fins. Body attains to 100 mm. in length. Spawning season is June. It is found in fresh-water throughout Japan.

Saurida argyrophanes (Richardson)
“Ma-eso”
PL. XV, fig. 7. × ² / ₃
D. 11；A. 10；scales 54.
Length of body equal to 4 ¹ / ₃ -4 ¹ / ₄ times that of head, and to 7 to 9 times depth of body；body elongated, cylindrical；head long and depressed, mouth large, oblique with lateral cleft；teeth in jaws and on tongue small, numerous；2 bands of teeth on palatines. Dorsal fin inserted nearer to tip of snout than to base of caudal and before posterior tip of pectoral；adipose fin small, inserted above last ray of anal. Scales rather large, ctenoid；lateral line well developed. Colour of body dark-brown on back, belly being yellowish；tips of dorsal, pectoral, and caudal fins blackish. Grows to 400 mm. in total length, living on sandy bottoms about 20-100 metres deep. This and several allied species are of very common occurrence along all the coasts of Hondo, especially in southern Japan.



コ ヒ
Cyprinus carpio Linné
(第十六圖版 第一圖) × ¹ / ₂
D. III, 17 to 22; A. III, 5; scales 33 to 36.
體は紡錘狀にして側扁し其長さは體高の3倍あるを普通とするも古來永く養殖されたる結果、體形の変化多く2.6より3.6倍に及ぶ。養殖魚は概して短く且つ背部高く天然産のものは長形のもの多し。體は大なる圓鱗にて被はれ頭には鱗なし。背鰭と臀鰭の前部には3個の棘を有し内2個は長く最後のものは最長にして後縁鋸齒狀を爲す。口唇小にして前方に突出し得べく上顎の兩側に各2本の鬚を有す。顎には齒なく、咽頭骨に強き臼齒を具ふ。背部は暗青色腹部は銀色なり。往々黄金色の光輝を有す。成長迅速にして養ひ易く3年にして壯成す。1乃至2疋のものを普通とすれども稀には15疋に達す。五、六月の頃産卵す。我國全體に産し池沼又は稻田にて養はれ特に本土中部地方に此養殖盛んなり。

ヒ ゴ ヒ
Cyprinus carpio Linné
(第十六圖版 第二圖) × ¹ / ₂
形態は普通のコヒと同様にて、唯色彩を異にするのみ。色彩は全體赤色又は暗黄赤色なり。金魚と共に愛玩用として廣く池中に養はれ、又普通のコヒと共に養ひ食用に供する處もあり。圖に示すはヒゴヒの変種にして特にベニゴヒと稱す。

コウ ハク ゴ ヒ
Cyprinus carpio Linné
(第十六圖版 第三圖) × ¹ / ₂
形態普通のコヒと同様なるも色彩紅と白とより成るを以て異なれり。普通白色の地に美麗なる紅色の斑紋を現はすものにして専ら愛玩用として廣く養はる。此コヒは新潟縣古志郡東山村附近にて古來養はれて種々改良せられ優良のものを産出せしも、餘り世人に知られざりしが、大正3年東京にて開かれたる大正博覽會に同地方より出品し夫れ以來世人の知る處となり、其種魚を各地方に送られ、今や廣く全國にて養はるゝに至れり。

シ ウ ス イ
Cyprinus carpio Linné
(第十六圖版 第四圖) × ¹ / ₂
此魚は我變り鯉と獨逸種草鯉との雜種にして形態は鯉に似、色彩はカハリゴヒの性質を帶ぶるものなり。體の大部分に鱗なく、唯背鰭の基部に1列の稍々大なる鱗あるのみ。色は青、赤、黄、黒、白相交はり種々の斑紋を現はす。時には側線に沿ふて不規則に竝列する鱗を具へ銀白色の光輝を現はし美觀を呈するものあり。此魚は東京の金魚商秋山吉五郎氏が約20年以前に始めて作りたるものにして前水産講習所長松原新之助氏之れを「秋琴」と命名したり。愛玩用として現今廣く養はる。

フ ナ
Carassius auratus Linne
(第十六圖版 第五圖) × ¹ / ₂
D. III, 18; A. III, 5; scales 28 to 31.
體形はコヒに似たれど背稍高く、體長は體高の2.7倍、頭長の3倍あり。吻は短く上方より望めば幅廣く、尖端鈍狀を爲す。口は小さく前方に突出するを得べく口唇に鬚なし。頭部以外全體圓鱗にて被はれ側線上の鱗數はコヒより少く(約3)あり。背部は暗青色腹部は銀白色又は黄金色を帶ぶ。體長は200耗前後のもの多きも大なるは300耗に達す。産卵期はコヒと同じく五、六月頃なり。淡水魚にして日本全體に産す。

ゲン ゴ ロウ ブ ナ
Carassius auratus Linné
(第十六圖版 第六圖) × ¹ / ₂
此魚はフナの大形のものにして、琵琶湖の特産魚なり。形態は普通のフナに同じ。同湖に産するフナは普通マルブナとヒラブナとに區別せられ、形態の丸形なるをマルブナ、背の高き側扁形のをヒラブナと稱し、ヒラブナの特に大形なるを同地方にて普通ゲンゴロウブナと稱す。其口方は普通1疋前後あるも稀には2疋に達す。習性普通のフナに同じ。

Cyprinus carpio Linné
“Koi” Carp
PL. XVI, fig. 1. × ¹ / ₂
D. III, 17 to 22; A. III, 5; scales 33 to 36.
Body oblong, compressed, its length normally 3 times its depth, the range of variation being from 2 ³ / ₅ to 3 ³ / ₅ times; generally body of wild species longer than that of domesticated. Body covered with large cycloid scales which do not extend on to head. Dorsal and anal fins have 3 spines anteriorly, of which two are well developed; of these the posterior is the longer and the more serrated behind. Mouth protractile, and has two barbels on each side of upper jaw, and no teeth on either jaw; pharyngeal bone well developed and has strong molar-like teeth. Back is dark-blue, belly silvery, sometimes brilliant golden-yellow. This fish has been domesticated for many centuries, and, consequently, it has numerous varieties of body-forms. The carp is a very hardy fish, grows rapidly and it commonly attains to weights of 1 or 2 kg. seldom 15 kg. It is bred in ponds, lakes and also in rice fields, especially in the central part of Japan.

Cyprinus carpio Linné
“Higoi” Red carp
PL. XVI, fig. 2. × ¹ / ₂
This fish is a domesticated variety of carp; general character of body similar to that of common carp, except its colouration, which is uniform yellowish-red throughout the entire body. This fish is extensively bred in ponds by goldfish-breeders as a pet. The fish here figured is called “Benigoi,” which is a variety of “Higoi.”

Cyprinus carpio Linné
“Kohakugoi” Coloured carp
PL. XVI, fig. 3. × ¹ / ₂

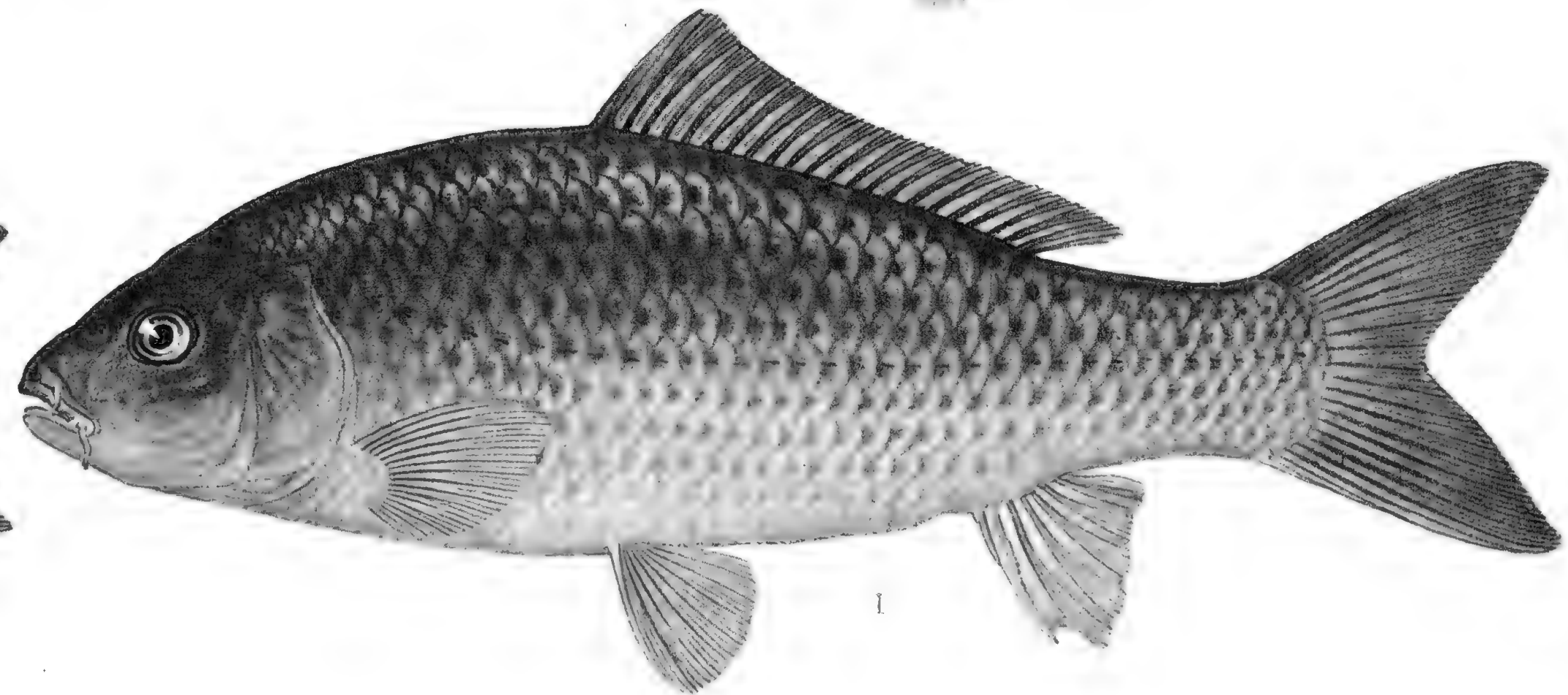
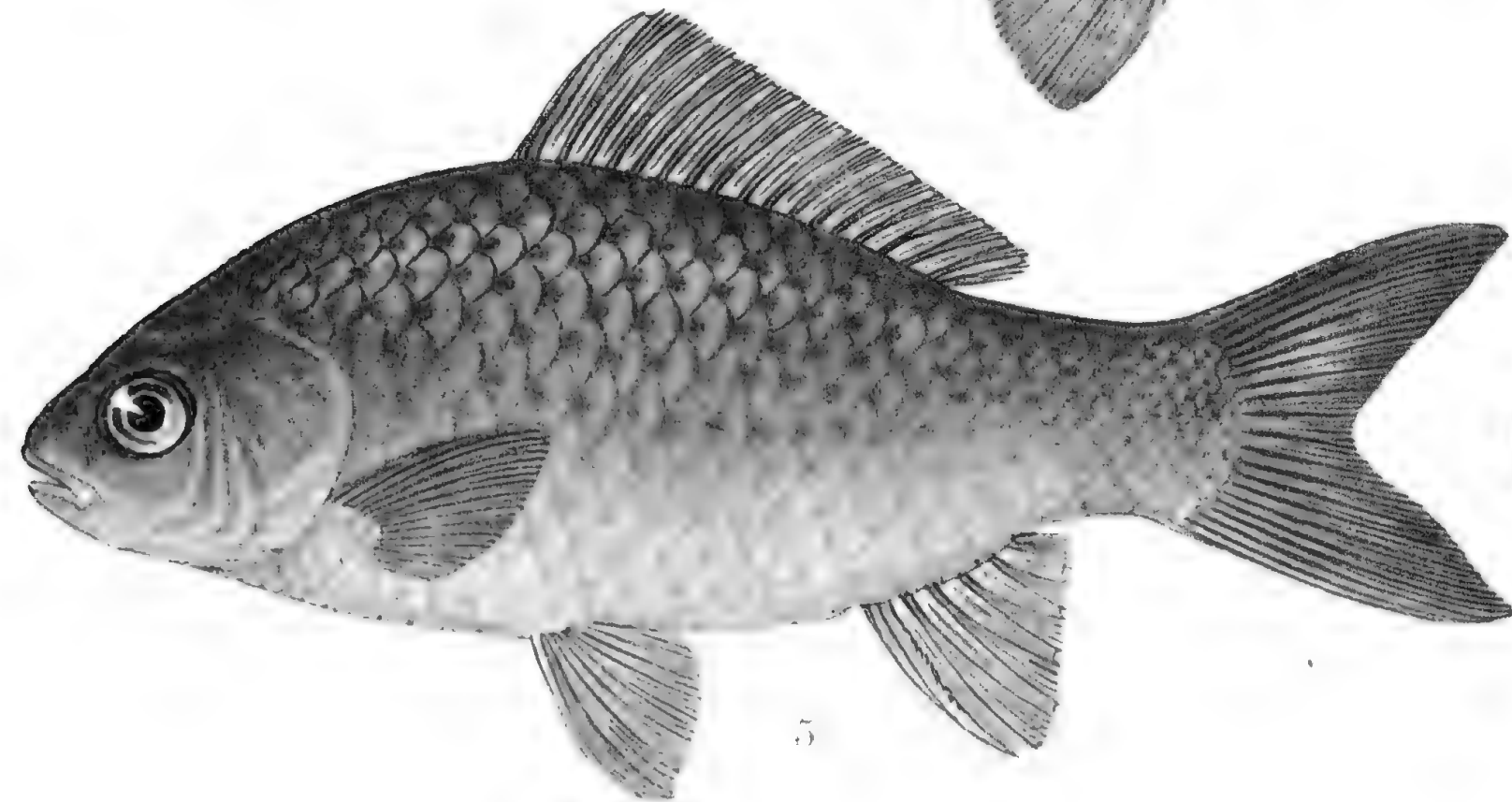
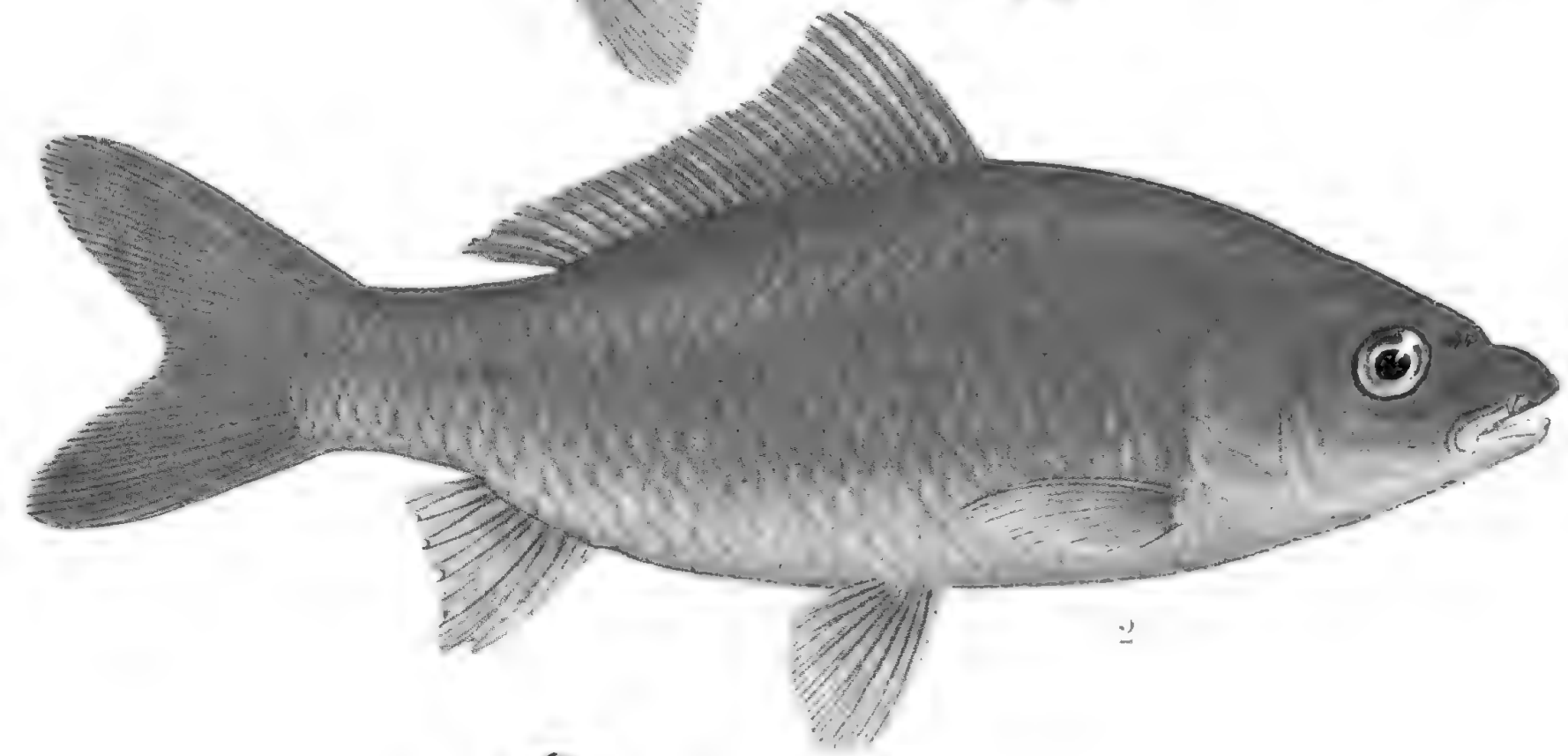
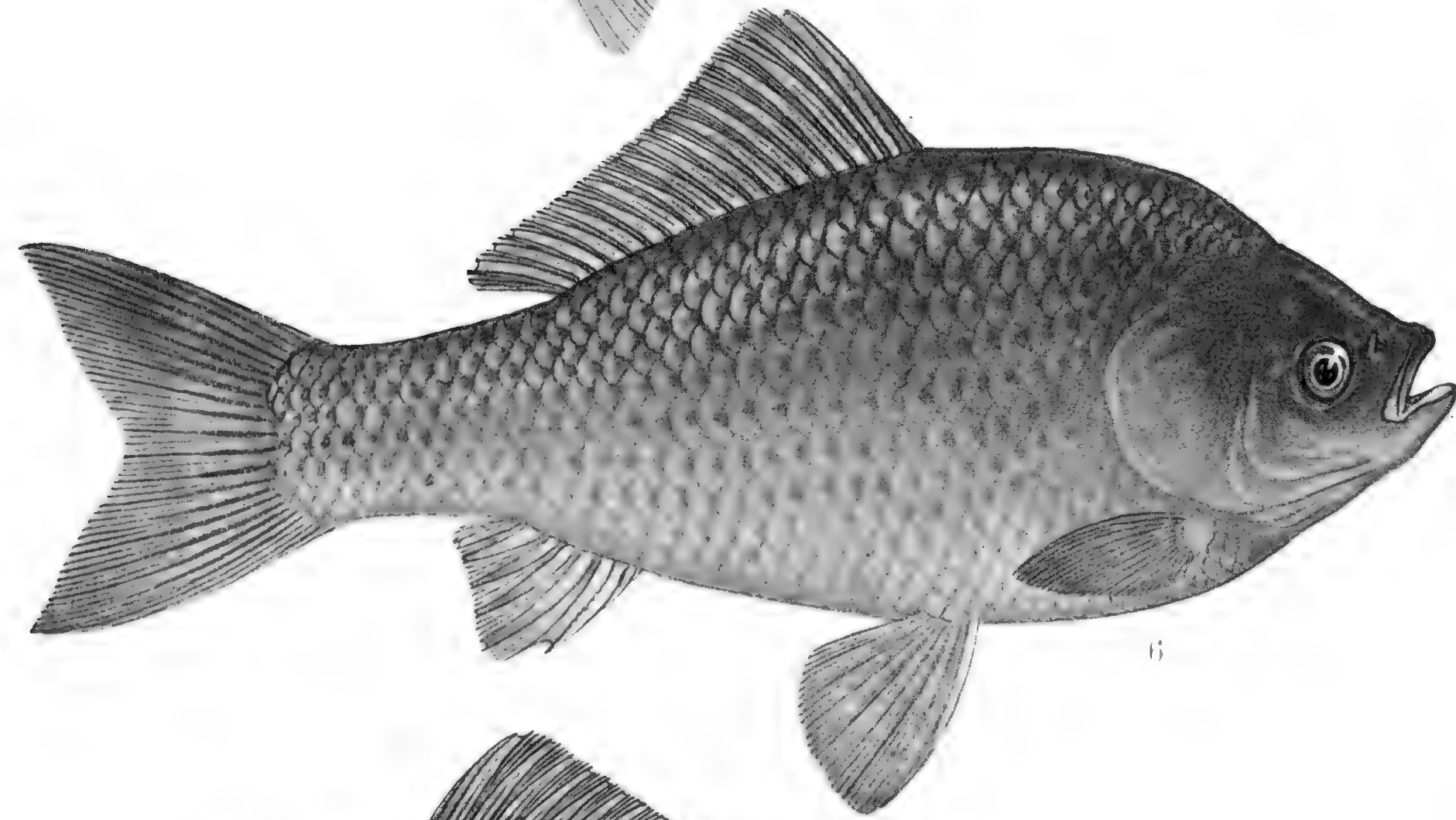
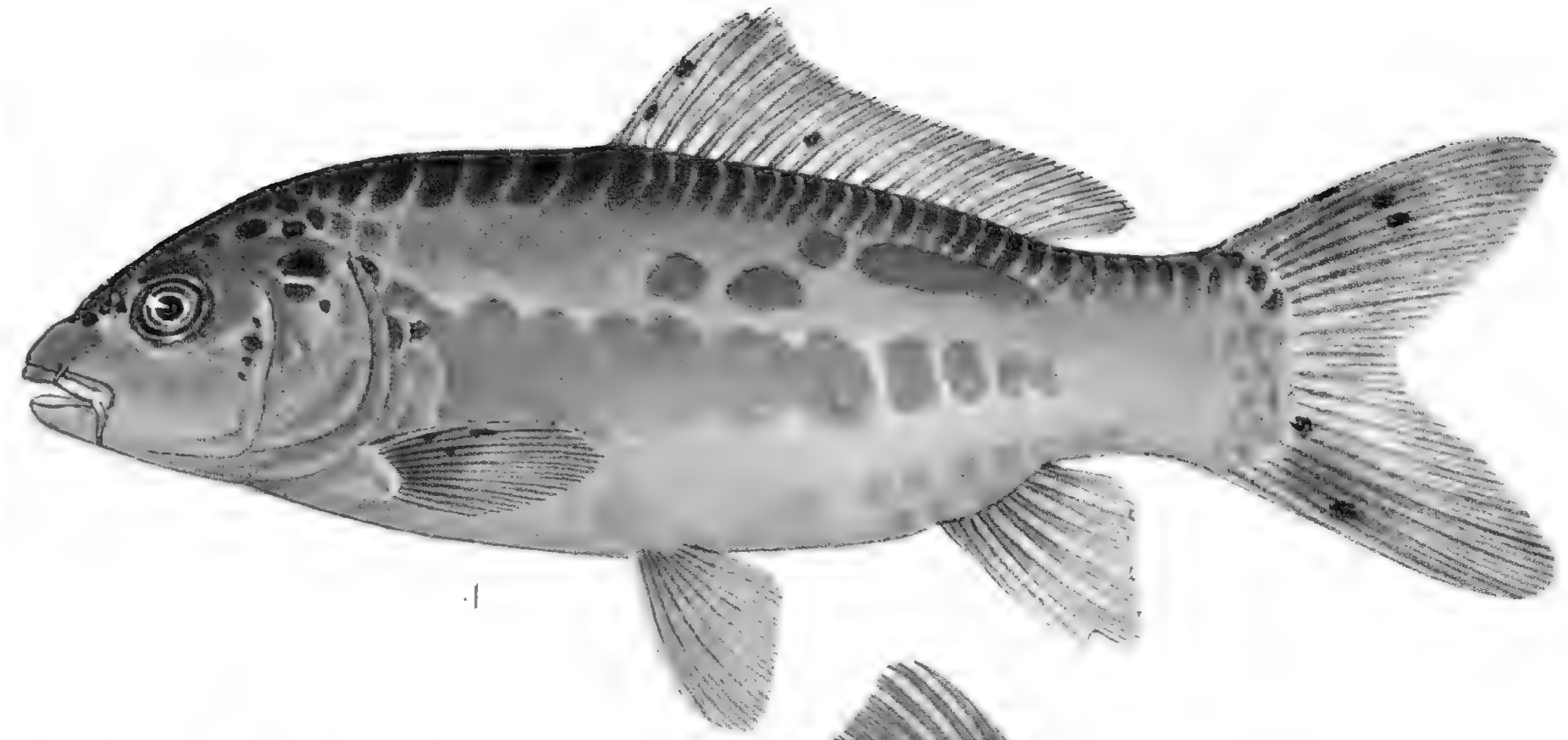
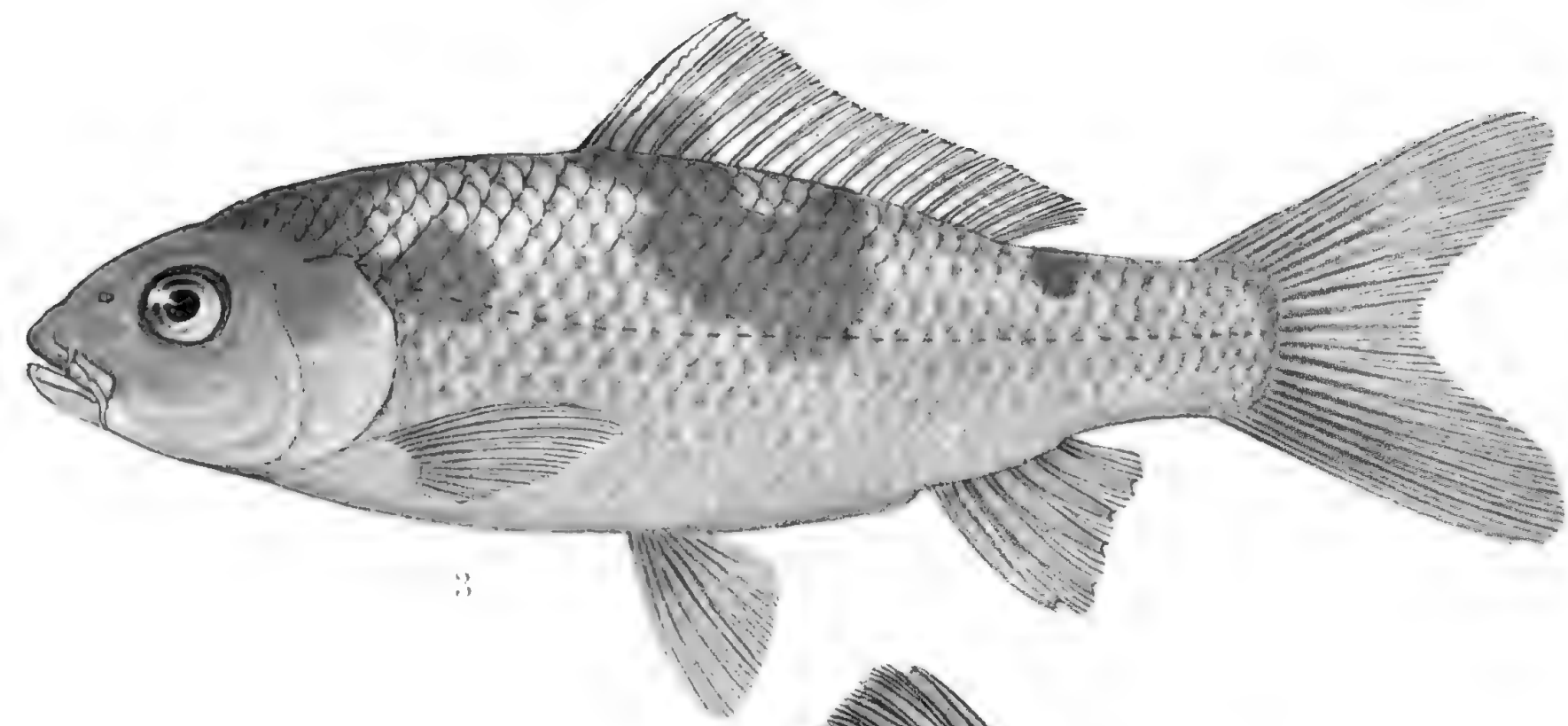
In Japan there are several kinds of coloured carp, of which the variety figured herein, is one variegated with only two colours, red and white. Although form of body and of fins is exactly similar to that of the common carp, it is characterized by the colouration of the body and of the fins, which are mottled with brilliant crimson-red spots, or blotches upon a silvery ground. This fish is bred throughout Japan as a pet.

Cyprinus carpio Linné
“Syusui” Coloured leather carp
PL. XVI, fig. 4. × ¹ / ₂
This carp was produced, thanks to the efforts of Mr. Akiyama, a goldfish-breeder, by the crossing of the Japanese coloured carp and the German Leather Carp. The form of body is similar to that of the common carp; a portion of the body along the base of the dorsal fin is covered with brilliant scales of irregular size, the rest of body being entirely scaleless. The body is variegated in colour red, yellow, orange, blue, black and white. This is cultured by goldfish-fanciers in Tokyo.

Carassius auratus Linné
“Huna”
PL. XVI, fig. 5. × ¹ / ₂
D. III, 18; A. III, 5; scales 28 to 31.
Form of body nearly similar to that of carp; back somewhat high; snout short, blunt and broad seen from above. Length of body equal to about 2.7 times its depth, and to 3 times length of head. The mouth protractile; it has no teeth and no barbels on either jaw. Body covered with large cycloid scales, of which those in the lateral line are about 30 in number. Back dark-blue; belly silvery-white in colour; sides of body sometimes have a golden iridescence. Spawning season from April to June; the eggs are adhesive. Full grown fish attains to about 300 mm. in length. This is a freshwater fish distributed very widely in Japan, and has to some extent an economic value.

Carassius auratus Linné
“Gengoro-buna”
PL. XVI, fig. 6. × ¹ / ₂

This fish is a large size form of *Carassius auratus*, which is a native of Lake Biwa, near Kyoto, and has the local name there of “Cengorobuna.” The body form and fins and also colouration are exactly similar to that of the common Crucian carp. In Lake Biwa, two body-forms of *Carassius auratus*, may be found, one of them being rounded, and the other much compressed; the larger specimens of the latter are commonly called “Gengorobuna,” as mentioned above; they attain to 300 mm. in length, and normally 1 kg. in weight, rarely 2 kg.





ワキン

・ **Carassius auratus** (Linné)

（第十七圖版 第一圖）×1

體は長く延が鮎に似、鰭は皆短く背鰭は完全にして尾は三つ尾又は四つ尾のものを普通とすれども鮎尾のものもあり、キンギョは元鮎より變じたるものとさるゝが此金魚は最も鮎に近く、従つて體及鰭の形は非常に能く相類似す。故に鮎尾のワキンは鮎と區別すること困難なり。

色は白色に赤斑又は紅斑あるものを上品とし、全體の赤色のものは稍劣る。全體白色のものは劣等にして多くは放棄せらる。此種は頗る強健にして成長も宜しく3歳にして體長100乃至120耗に達す。最も養ひ易きが故廣く一般に養はれ他のキンギョに比し價廉なり。東京府下及び愛知縣彌富地方にて盛んに養はる。

リウキン

Carassius auratus (Linné)

（第十七圖版 第二圖）×1

體は短く背は高く、頭部は小さく腹部は圓く膨れ、尾は三つ尾又は四つ尾にして、非常に長く延び、往々體長以上に及び、軟かく弱かにして恰も柳枝の如く垂下し、頗る美觀を呈す。背鰭も完全にして鰭條長く延び其他胸、腹、臀鰭共に鰭條長し。臀鰭は1枚のものと左右2枚に分るゝものとあり、色彩は全體赤色のものもあれども紅白の斑紋艷麗なるものを貴ぶ。體長3歳魚にて80耗に達す。ワキンと同じく強健にして養ひ易きが故に、廣く一般に養はる。特に東京、大和郡山、愛知縣彌富地方にて盛に養はる。價格は餘り高からざれども體形完全にして色彩の優秀なるものは高價なり。近年盛んに米國に輸出せらる。

ランチウ

Carassius auratus (Linné)

（第十七圖版 第三圖）×1

ランチウは又マルツコ、或はシシガシラとも稱す。體は甚だ短く背腹共に丸く頭部には瘤狀の突起を有し著しく膨大す。其狀恰も獅子頭に似るを以てシシガシラと稱す。又此突起の著しく現れざるものもあり、尾は三つ尾又は四つ尾にして短く背鰭なく背部は滑かにして四凸又は棘刺などなく櫛背形に彎曲せるものを貴ぶ。尾柄は太く且つ丸く左右何れにも傾かず適度に延びたるものを上品とす。臀鰭は單一のものと左右2枚に分れたるものとあり、又全く之れを缺くものあり、其他胸、腹鰭共に短し、色は全體赤色のもの多きも往々紅白の斑紋を生ずるものあり。此金魚は體が著しく短縮せる爲游泳困難にして運動頗る不活潑なり。概して弱く優秀のものは養ふに難し故に特種の愛玩家にのみ養はる。東京・大阪地方には之れを愛玩するもの多く、優良品の價格は頗る高價なり。

オランダシシガシラ

Carassius auratus (Linné)

（第十七圖版 第四圖）×1

此キンギョは體形及び鰭の形リウキンに類似するも頭部瘤狀に膨大し、所謂獅子頭狀を爲せるを以て異なれり。三つ尾又は四つ尾にして非常に長く延び體長以上に及ぶ

背鰭完全にして鰭條延長す。其他の鰭も皆な長く軟くして弱かなり。色は紅白の斑紋あるものを貴ぶ。體長は3歳魚にて約80耗に達す。稀には20年以上生存し體長180耗に及ぶものあり。此キンギョはリウキンに比し養ひ難き故に一般には飼育されず。大和郡山及び大阪地方にて古來多く養はれ關東地方には稀なり。3、4歳以上のもの體形色彩共に艷麗にして最も貴ばる。價格頗る高價なり。

デメキン

Carassius auratus (Linné)

（第十七圖版 第五圖）×1

此金魚は明治年間に支那より渡來したるものにして一名支那金と稱す。眼球の著しく突出せるを特徴とす。體形は我リウキンに類似し短く背高く尾は三つ尾となり背鰭を有し各鰭は何れも延長せり。全體は圓鱗にて被はる。體の鱗は頗る透明にして恰も無鱗の如く見ゆるものあり。又同一體の内兩種の鱗を混するものと透明鱗、普通鱗の何れか一種のみを有するものとあり。色彩も亦多種多様なること本邦在來のキンギョと異れり。即ち紅白の斑紋あるものと紅白の外、青、黃、黒など各種の色を混じ種々の斑紋を現はすものと、全體純黒のものとあり。上記雜色のものは支那金魚特有のものにして多くは透明鱗なり。純黒のものは皆な眼球著しく突出す。此キンギョは現今全國一般に廣く養はれ價も廉なり。

シュウキン

Carassius auratus (Linné)

（第十七圖版 第六圖）×1

此金魚はオランダシシガシラとランチウとの交配種にして體形ランチウに似て圓く背鰭を缺き頭部は瘤狀に膨大し所謂獅子頭となり、尾臀胸腹の各鰭條はオランダの如く長く延び弱かなり。色彩はランチウの如く全體赤く黄金様の光輝あるもの多きも亦紅白の斑紋を現すものもあり。此金魚は元東京深川の金魚商秋山吉五郎氏が明治三十三年以來苦心の結果作りたるものにして元水産講習所長松原新之助氏が、秋錦と命名せるものなり。現今稀に養はれ價も貴し。

シュブンキン

Carassius auratus (Linné)

（第十七圖版 第七圖）×1

此金魚はワキンの如く長く、尾は鮎尾なり。背鰭を有し、各鰭は皆延長す。眼は突出せず、色彩は赤、黃、青、白、黒、等の雜色斑紋を現はすを特徴とす。全體透明鱗にして被はるるを普通とすれども一部分に少數の光輝ある普通鱗を混するものもあり。此種もシュウキンと同じく秋山吉五郎氏が始めてデメキンとフナとワキンとを合配して作りたるものにして松原新之助氏が朱文金と命名せるものなり。我國にては現今一般に廣く養はるゝが特に東京に多し。體健全にして運搬に耐ゆるが故多く米國に輸出せらる。

Carassius auratus (Linné)

“Wakin,” Common gold fish.

PL. XVII, fig. 1. ×1

Body elongated, compressed, and all fins short, that of caudal normally double; sometimes it is single. This variety is considered the most primitive form of gold-fish and to be derived from the wild Crucian carp, because the shape of body and size of fins resemble those of the latter. Body commonly mottled with red blotches or spots of irregular shape and unequal sizes upon a silvery ground, being often uniform red throughout the entire body. This variety, on account of its being hardy and easy to raise, is the commonest and least expensive gold-fish bred in Japan. The matured fish attains normally to lengths of from 100 to 120 mm. in 3 years.

Carassius auratus (Linné)

“Ryûkin,” Fringetail goldfish

PL. XVII, fig. 2. ×1

Body short, deep and compressed, all fins very long. Characterized by extraordinary development of the caudal fin, which is normally double and almost twice as long as the body length; its posterior margin may be moderately or deeply forked. Dorsal and anal fins always present and long. Colouration of body and fins variegated brilliant crimson red and white, though red may predominate. This gold-fish is very commonly bred all over Japan, especially in Tokyo, Yatomi (Prov.) and Kôriyama (Prov.).

Carassius auratus (Linné)

“Rantýû,” “Marukko,” “Sisigasira,”

Lionhead goldfish

PL. XVII, fig. 3. ×1

Body nearly globular in form, with contracted length and increased depth and breadth. This fish is characterized by absence of a dorsal fin, and by the wartlike growth covering almost the entire head which is broad and short. Caudal fin double and short; anal fin if present is double or single, but often absent. Colour of entire body and fins commonly red or golden, sometimes variegated red and white. This goldfish being very delicate and not easy to breed is only cultured by specialists in Tokyo, Osaka, and other cities in Japan. This is one of the most valuable kinds of our goldfish.

Carassius auratus (Linné)

“Oranda sisigasira,” Dutch lionhead

PL. XVII, fig. 4. ×1

Body like that of the fringetail, is short, high and compressed, with beautiful elongated fins. Dorsal fin present; caudal fin always double, broad and gracefully streaming, its length being equal to or exceeding that of body. This goldfish distinguished from fringetail by wartlike growths on head as has the lionhead. It may be surmised that this variety was produced by crossing the lionhead and the fringetail, the characters of both appearing. It measures normally a length of 100

mm. Colouration is, like that of the fringetail, variegated red and white. Owing to the attractive shape and beautiful colouration, it is always prized in Japan. This gold-fish is culture.d only by specialists at Kôriyama, and in Osaka.

Carassius auratus (Linné)

“Demekin,” Chinese telescope goldfish

PL. XVII, fig. 5. ×1

This goldfish is characterized by the elongation of the eye-balls which project or protrude either laterally or forward beyond the contour of the head. Body generally short and compressed; size of the fins is similar to that of fringetail. This goldfish occurs either in an ordinarily-scaled or in an apparently scaleless condition viz. the transparent scaled variety; the latter however, has scales so thin and transparent as to be practically invisible. Colouration very variable; in general irregular bloethes in combinations of red, black, white, blue, yellow, orange, gold may be found, and it is also often mottled red and white only. Sometimes intense black uniform colour covers entire body and fins with velvety lustre, characteristic of telescope goldfish. This goldfish was brought about 40 years ago from China to Yokohama, and bred at first by a fancier in Tokyo; at the present time it is cultured extensively all over the country.

Carassius auratus (Linné)

“Syukin,” Fringetail lionhead

PL. XVII, fig. 6. ×1

This variety came into existence about 30 years ago, as a result of the efforts of Mr. Akiyama, goldfish-breeder of Tokyo, to obtain a form intermediate between the common lionhead and the Dutch lionhead. Body rounded in form like that of the lionhead but somewhat more elongated; all fins very long like those of the Dutch lionhead; back broad, rounded, and finless. Head is almost completely covered with wartlike growths similar to those of the lionhead. Colour of body variegated red and white, of which golden-red may predominate. At present, this goldfish is seldom bred in Japan.

Carassius auratus (Linné)

“Syubunkin,” Calico goldfish

PL. XVII, fig. 7. ×1

The principal characters of this variety are an elongated, compressed body with long fin rays, single anal and caudal fins, the latter being deeply forked. The body is covered for the most part with transparent thin scales, but partly with bright common scales. Colouration of the body and the fins is highly variegated, in red, blue, yellow, black and white. This goldfish was obtained by Mr. Akiyama, a breeder of Tokyo, from the crossing of the wild Crucian carp, Chinese telescope and common Japanese goldfish; it has the character of the common goldfish as to shape of body and of eye, the latter not produced, and it has in addition the variegated colouration, and elongated fin rays of the Chinese Telescope. This goldfish is cultured extensively in Japan.





アブラハヤ

Leuciscus atrilatus (Jordan & Thompson)

(第十八圖版 第一圖) ×1

D. 10； A. 10； scales 80.

體は長くして頭長の4倍、體高の5倍あり、鱗は小さく、口邊の鬚なし、背部は暗色にして多數の黒點散在し、體側に黒色の縦帶あり、小形なる淡水魚にして體長100 耗内外あり、好んで水の清冽なる場所に棲息す、琵琶湖に多し。

ヒガイ

Sarcocheilichthys variegatus (Temminck & Schlegel)

サクラバエ (岐阜)

(第十八圖版 第二圖) ×1

D. 11； A. 0； scales 42.

體は長く體高の4倍、頭長の3²/₅倍あり、體は稍大なる鱗を被むり頭部には之れなし、口は小さく馬蹄形を爲し、下面にあり、口吻に短かき鬚を有す、咽頭骨の齒は左右各5個あり、尾鰭の先端は凹形を爲す、琵琶湖に産するヒガイは頭丸、頭長及び油ヒガイの三種に分たる、頭丸は頭部小さく吻端鈍圓にして體肥滿せるも頭長は吻端尖り頭稍長し、兩者とも背鰭に斜に1條の黒斑を有し、鰓孔の後部にも黒點あり、又體側には淡黒の縦帶を有す、雄魚は眼球赤色を呈するも雌は然らず、雌魚には肛門部に長く突出したる輸卵管を具ふ、油ヒガイと稱するは體形前二種と同様なるも、色彩全體帶黃暗褐色なるを以て異なれり、第二圖に示すもの即ち之れなり、體長250 耗に達す、四月より六月に亘り産卵す、琵琶湖に特に多く、此魚は長くも明治天皇が御賞味あらせられしを以て其名高く爲めに鯉の字を用ゆるに至れり、琵琶湖沿岸地方にては價甚だ高し、近年他の地方に移殖し、其結果良好にして就中、諏訪湖、霞ヶ浦、今江潟(石川縣)等、蕃殖著し。

カマツカ

Pseudogobio esocinus (Temminck & Schlegel)

(第十八圖版 第三圖) ×1

D. II, 8； A. II, 8； scales 42.

體稍細長く頭部より尾部に向ひ次第に細し、體長は體高の6倍、頭長の3³/₅倍あり、吻部は長く其前端は鈍形にして下顎より稍長く、口は小さく、頭部の下面に存し、唇は前方に突出するを得べく、厚き肉質にして短き鬚を備ふ、咽頭骨には2列に齒を有し6又は5、2-2、5又は6の如く並列す、體には大なる圓鱗を被むり頭部には

なし、體長約250 耗に達す、産卵期は五月より六月に及ぶ、淡水魚にして全國に分布す。

アブラボテ

Acheilognathus limbatum (Temminck & Schlegel)

(第十八圖版 第四圖) ×1

D. 11； A. 12； scales 33.

體は短く且つ高く其長さは體高の2.3倍、頭長の4倍あり、口唇に鬚を有す、鱗は大形なり、小なる淡水魚にして琵琶湖に多し。

ハエ

Zacco platypus (Temminck & Schlegel)

(第十八圖版 第五圖) ×1

D. 9； A. 12； scales 42 to 44.

體は長く體高の約4倍、頭長の4倍あり、頭部を除き其他全體に稍大なる圓鱗を被むり、口は小さく鬚なし、臀鰭の前部にある4個の鰭條は著しく延長せり、背部は青色を帶び腹部は銀白色を呈す、體長100 耗に達す、産卵期は春夏の候なり、淡水魚にして全國に分布す。

オイカワ

Zacco platypus (Temminck & Schlegel)

(第十八圖版 第六圖) ×1

此魚はハエの雄にして、色彩は背部青色腹部銀白なるも産卵期には體に赤色の斑紋を現はし美觀を呈す。

ハス

Opsariichthys uncirostris (Temminck & Schlegel)

(第十八圖版 第七圖) ×1

D. II, 8； A. III, 0； scales 50.

體は長く體高の4¹/₅倍、頭長の3⁴/₅倍あり、口は大きく斜めに上方に向ひ、口唇は突出し得べく下顎は上顎より稍長し、前上顎骨には深き凹みありて下顎の凸部に對す、顎には齒なく喉頭骨には3列の齒あり、臀鰭條の一部は甚だしく延長せり、體は稍大なる圓鱗を被むり頭には之れなく側線完備す、體は青色を呈し、雄は産卵期には體側に赤斑を現はす、體長370 耗、體重400 瓦に達す、此魚は琵琶湖に多く産し彦根地方にて特に珍重せらる。

Leuciscus atrilatus (Jordan & Thompson)

“ Aburahaya ”

PL. XVIII, fig. 1. ×1

D. 10, A. 10; scales 80.

Body elongated, compressed, its length equal to 4 times that of head, and to 5 times its depth. Body covered with small cycloid scales; head scaleless. Jaws have no barbels. Back dark colour, sprinkled with numerous black spots and a black band may be seen along the side. Small fish, attaining to about 100 mm. in length, and found in clear fresh water, being specially abundant in Lake Biwa.

Sarcocheilichthys variegatus (Temminck & Schlegel)

“ Higai ”

PL. XVIII, fig. 2. ×1

D. 11, A. 9; scales 42.

Body elongated, compressed, its length equal to 4 times the depth, and to 3²/₅ times that of head. Body covered with cycloid scales of rather large size, head scaleless. Mouth small, horseshoe-shaped, situated inferiorly, with short barbels along both sides. Mouth has no teeth except pharyngeal bones which have 5 teeth each side. Caudal fin emarginated. It attains to 250 mm. in length. Spawning season is from April to June. Principal habitat of this fish is Lake Biwa, near Kyoto, where it is specially abundant, and economically valuable as food.

Pseudogobio esocinus (Temminck & Schlegel)

“ Kamatuka ”

PL. XVIII, fig. 3. ×1

D. II, 8, A. II 8; scales 42.

Body elongated, rather slender, tapering behind and somewhat compressed; length of body equal to 3³/₅ times of head, and to 6 times its depth. Snout long, compressed, slightly projecting beyond mandible, its tip being bluntly rounded. Mouth small, protractile, inferiorly situated; lips very broad and fleshy, and covered with well developed papillae; it has a short barbel on each side of jaw. Pharyngeal bone has 2 rows of teeth, their formula being 6 or 5, 2-2, 5 or 6. Body covered with large cycloid scales except head which is scaleless. It attains to about 250 mm. in length, spawning season is from May to July. It is the commonest fresh-water fish in Japan.

Acheilognathus limbatum (Temminck & Schlegel)

“ Aburabote ”

PL. XVIII, fig. 4. ×1

D. 11, A. 12; scales 33.

Length of body equal to 2¹/₅ times of the depth,

and to 4 times length of head. Mouth has a barbel on each side, scales large. It is a small freshwater fish, occurring abundantly throughout Japan.

Zacco platypus (Temminck & Schlegel)

“ Hae ” female

PL. XVIII, fig. 5. ×1

D. 9, A. 12; scales 42 to 44.

Length of body equal to 4 times that of head, and also 4 times depth of body. Body covered with moderately large cycloid scales, except head which is entirely scaleless. Some of the anal fin rays are exceedingly prolonged, extending far beyond the base of the caudal fin, if laid backwards. Body uniformly bluish, belly being silvery. It attains to about 100 mm. in length; spawning season is from Spring to Summer. It is a common fresh-water fish in Japan.

Zacco platypus (Temminck & Schlegel)

“ Oikawa ” male

PL. XVIII, fig. 6. ×1

This fish is the male of “ Hae ” (fig. 5). Body similar in form to that of “ Hae,” Body darkish-blue above, with silvery below; sides with bluish cross bands; at spawning season there appear beautiful red blotches along the side.

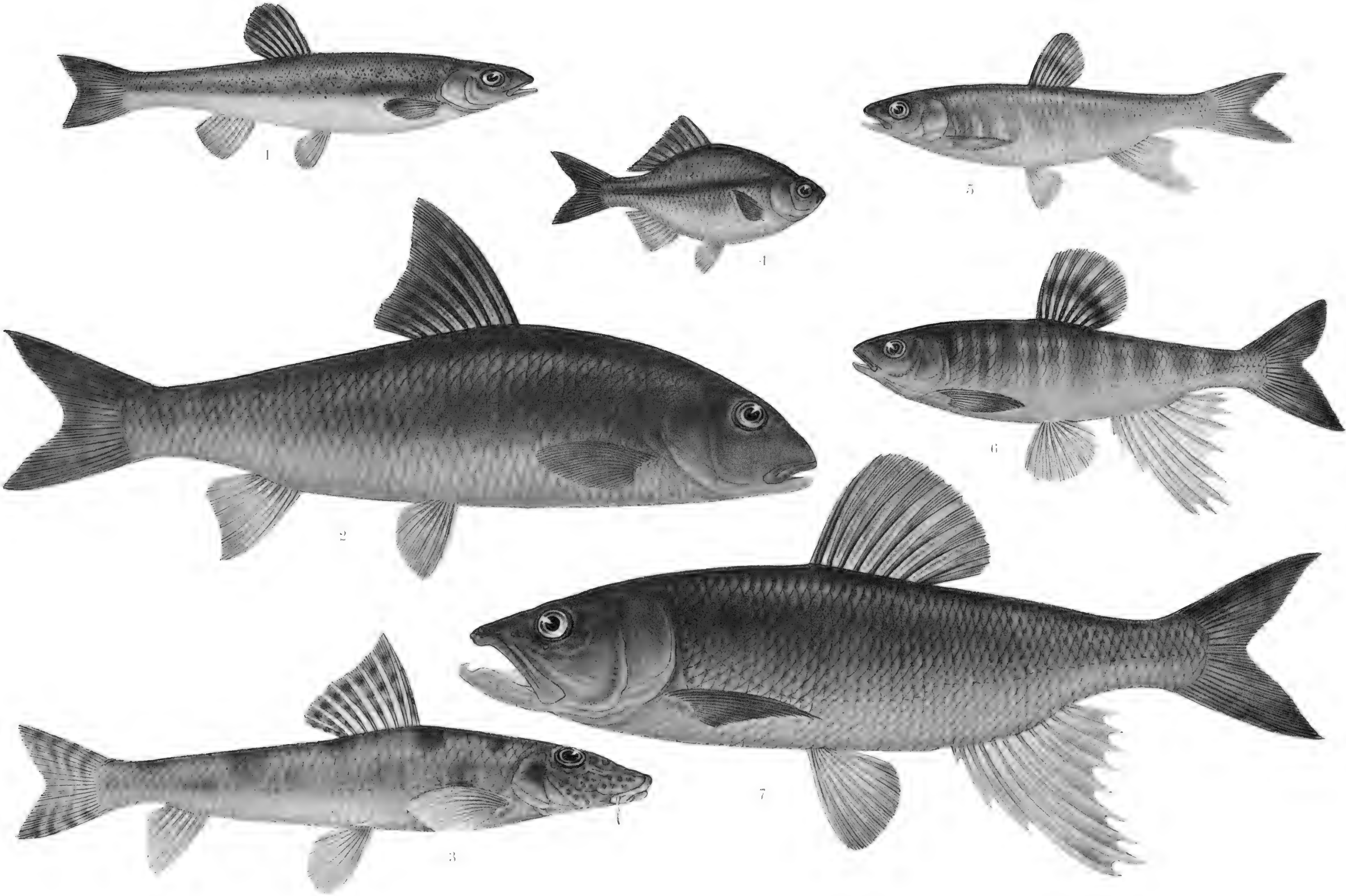
Opsariichthys uncirostris (Temminck & Schlegel)

“ Hasu ”

PL. XVIII, fig. 7. ×1

D. II, 8; A. III, 9; scales 50.

Body long, compressed and its length equal to about 4 times the depth and 3⁴/₅ times length of head. Mouth is large, oblique, protractile; lower jaw much longer than upper; premaxillary has a deep notch which fits well into the corresponding projection on mandible. Has no teeth in mouth except on pharyngeal bone which has 3 rows of teeth. Anal fin rays prolonged. Body covered with rather large cycloid scales which are not found on the head; lateral line complete. Body bluish; in male there appear red blotches along the side at spawning season which is from May to July. Body attains to 370 mm. in length, and 400 gr. in weight. This fish is abundant in Lake Biwa.





ヨウジウヲ
 <div>Syngnathus schlegeli (Kaup)</div>
（第十九圖版 第一圖） ×1
D. 35 to 41.

體は甚だ細長く側扁せしして軀幹に隆起縁あり。切隆面は凡六角形をなし、頗る長き尾部をなせり。頭は瘡形にして吻は長き管に延長し尖端に無齒の顎あり。體輪は肛門の前方に18乃至20個、後方に39個乃至40個あり。背鰭は肛門に對して初まり、8乃至9個の體輪に跨れり。體は暗褐色にして往々小形の白點を散在す。本邦至る所の沿岸の海に棲息し夏季抱卵せり。雄の腹部に於ては左右に皮褶ありて卵囊を形成せり。卵囊中にある孵化兒は臍囊を吸収し盡すと共に體外に游出す。體長200耗乃至250耗に達す。

タツノオトシゴ
 <div>Hippocampus coronatus Schlegel</div>
（第十九圖版 第二圖） ×1
D. 13 to 14; P. 11; rings 10+38 to 49.

體は稍長く側扁し腹部膨出せり。尾部は細長くして通常内方に彎曲せり。體及尾部には骨質板ありて體輪をなし、肛門より前方に10個、其後方に38乃至40個あり。頭は體の方向と直角にありて頭頂には冠狀物あり。吻は長く骨狀にして其先端にある小さき顎には齒なし。鰓孔は小さく頭蓋上部後方にあり。頭頂と頭側とには棘あり。外觀馬に似たるを以てウミウマの稱あり。體色は棲息場により種々の變化あるも淡褐色又は濃褐色にして黒斑點を散在し鰓蓋には線狀の模様あり。雄に於ては尾部基底に卵囊存し體輪7個に跨れり。本邦沿岸淺所の海藻繁茂せる中に多數棲息す。海馬類中比較的小形にして體長60乃至100耗前後なり。

タカクラウミタツ
 <div>Hippocampus takakurae Jordan & Starks</div>
（第十九圖版 第三圖） ×1
D. 21; rings 11+41.

吻長は頭の後眼部に等しく、眼徑の2⁴/₅倍あり。頂冠甚だ低く腹部は稍膨出せり。體は濃褐色或は灰色にして軀幹の側方背部に接して3個の黒點あり。其大さは鰓孔より稍大、軀幹の腹中線に褐色の縦線あり。背鰭には褐色帶あり。本邦中部沿岸に産し、其數前種より少し。體長は比較的大きく150耗に達す。

ウグヒ
 <div>Leuciscus hakuensis Günther</div>
 <div>アカハラ(日光) アカウオ(諏訪) マルタ(東京) イダ(九州)</div>
（第十九圖版 第四圖(アカハラ) 第五圖(マルタ)）×1
D. III, 7; A. III, 8; scales 75.
體細長にして其長さは體高の4倍、頭長の4倍あり。口は稍小さく下面にありて突出し得べく、鬚なく又顎に齒なし。咽頭骨には齒を具へ、5,2—2,4の如く並列す。

體には小なる圓鱗を被むり頭部には之れなし。色は背部暗褐、腹部は銀白なり。産卵時季には體側に紅色縦帶を現はし美觀を呈す(第一圖)。故にアカウオと稱せらる。體長300耗に達す。産卵期は四月より六月に至る。淡水魚にして全國に分布す。其内海に入り淡鹹混交水中に棲息するものあり。此種のもは春河川に溯上し産卵す。東京地方にては之れをマルタと稱す(第二圖)。又山間の湖沼にも産す。諏訪湖、日光中宮祠湖などに多し。

ニコヒ
 <div>Hemibarbus barbus (Temminck & Schlegel)</div>
（第十九圖版 第六圖） ×1
D. 10; A. 9; scales 49.

體はコヒに似て細長にして吻部は特に長し。體長は體高の4¹/₂倍、頭長の3³/₄倍あり。口は小さく左右に鬚を有す。體は大なる圓鱗を被むり頭部には之れなし。背鰭前部の鰭條は強大にして棘狀を呈す。背部は暗灰色にして腹部は銀白色なり。體長450耗に達す。産卵期は五、六月の頃なり。淡水魚にして全國に分布す。

モロコ
 <div>Gnathopogon mayedae (Jordan & Snyder)</div>
（第十九圖版 第七圖） ×1
D. 10; A. 9; scales 42.

體は細長にして其長さは體高の4¹/₂倍、頭長の4¹/₂倍あり。口は小さく斜めに上方に向ひ兩側に短かき鬚あり。全體稍大なる圓鱗にて被はる。體色は背部青褐、腹部銀白色を呈す。體長約100耗に過ぎざる小魚なり。産卵期は四月より六月に至る。淡水魚にして日本内地に廣く産するも特に琵琶湖に多く同地にては冬季珍重す。

タナゴ
 <div>Acheilognathus moriokae Jordan & Thompson.</div>
（第十九圖版 第八圖） ×1
D. 12; A. 10; scales 37.

體は高く左右の幅狭く體長は體高の2¹/₂倍、頭長の4倍あり。頭は短かく口は小さく左右に小鬚を具ふ。全體大なる圓鱗にて被はる。體色は背部は暗青にして尾部體側に暗綠色の帶條あり。小魚にして體長40耗に過ぎず。淡水魚にして廣く全國に分布す。

カワムツ
 <div>Zocco temmincki (Temminck & Schlegel)</div>
（第十九圖版 第九圖） ×1
D. 9; A. 12; scales 55.

體は長く其長さは體高の3¹/₂倍、頭長の3¹/₂倍あり。口は斜向し口裂稍廣く、鬚なく、顎に齒なく咽頭骨には各側に11個の齒ありて、5,4,2-2,4,5の如く排列す。臀鰭條は延長せり。體は稍大なる圓鱗を被むり頭部には之れなし。側線完全なり。背部は暗青色腹部は銀色にして體側には暗色縦帶あり。體長150耗に達す。五、六月の頃産卵す。淡水魚にして本邦中部地方に多し。

Syngnathus schlegeli (Kaup)
“ Yodi-uwō ”
PL. XIX, fig. 1. ×1

D. 35 to 41.
Body slender, elongated, 6 angled, not compressed, tapering to a very long tail, head slender, long tube-like, sub-terate snout, which has very short, toothless jaws at the end.
Body rings 18—20±39—43; dorsal fin distinet, rather short, inserted opposite anus, with 8 or 9 covering rings; colour of body dark-brownish, frequently with small whitish dots. Exceedingly common from Hokkaido to Nagasaki. This fish occurs on seaweedy bottoms in shallow water, and grows to 200—250 mm. in length. Male with an egg pouch along the under side of the tail, formed by two cutaneous folds and split lengthwise to release the young.

Hypocampus coronatus Temminck & Schlegel
“ Tatuno-otosigo ”
PL. XIX, fig. 2. ×1

D. 13 to 14; P. 11; rings 10+38 to 40.
Body much compressed, with belly gibbous, tapering abruptly to a long, prehensile tail; body and tail covered with horny plates forming rings. Snout slender, and about as long as post-orbital part of head. Coronet very high, pedunculated, varying in form; its tip usually having six lobes or spines. Egg pouch on 7 rings of body. Colour of body varies, usually light-brown with dark dots and mottlings, and light or dark streaks on opercle. It occurs very commonly on coasts of Japan in clear waters. Total length is about 60 to 100 mm.

Hypocampus takakurae Jordan & Starks
“ Takakura-umitatu ”
PL. XIX, fig. 3. ×1

D. 21; rings 11+41.
Length of snout equal to that of post-orbital portion of head, and to 2⁴/₅ times diameter of eye. Coronet very low. Body darkish-brown. Anterior lateral portion with three black spots, and three brownish bands on dorsal fin. This fish occurs on shallow weedy bottoms in Japan, growing to 150 mm. in length.

Leuciscus hakuensis Günther
“ Ugui ”
PL. XIX, figg. 4, 5. ×1

D. III, 7; A. III, 8; scales 75.
Body elongated, compressed, its length equal to 4 times that of head and to 4 times depth of body. Mouth rather small, situated inferiorly and protractile; it has no barbels nor teeth in jaws, except on pharyngeal bone which has teeth arranged in the serial order 5, 2—2, 4. Covered with rather small cycloid scales which do not occur on head. Body dark-brown above, silvery on belly; at spawning season develops a red band along side, so that it is called “akauwo” (meaning red fish) in some localities (fig. 1). This fish attains to a length of more than 300 mm.; its breeding season is from April to June. It haunts fresh and brackish waters, being distributed all over Japan.

Hemibarbus barbus (Temminck & Schlegel)
“ Nigoi ”
PL. XIX, fig. 6. ×1

D. 10; A. 9; scales 49.
Body like carp in form, being more elongated; snout much longer than that of carp. Length of body equal to 4¹/₂ times the depth and to 3³/₄ times the length of the head. Mouth small, furnished with a pair of barbels. Body covered with rather large scales; head entirely scaleless. Anterior ray of the dorsal fin strong and spine-like. Back dark-grey, abdomen silvery-white. This fish attains to a length of 450 mm., its spawning season is from May to July. It occurs in fresh water throughout Japan.

Gnathopogon mayedae (Jordan & Snyder)
“ Moroko ”
PL. XIX, fig. 7. ×1

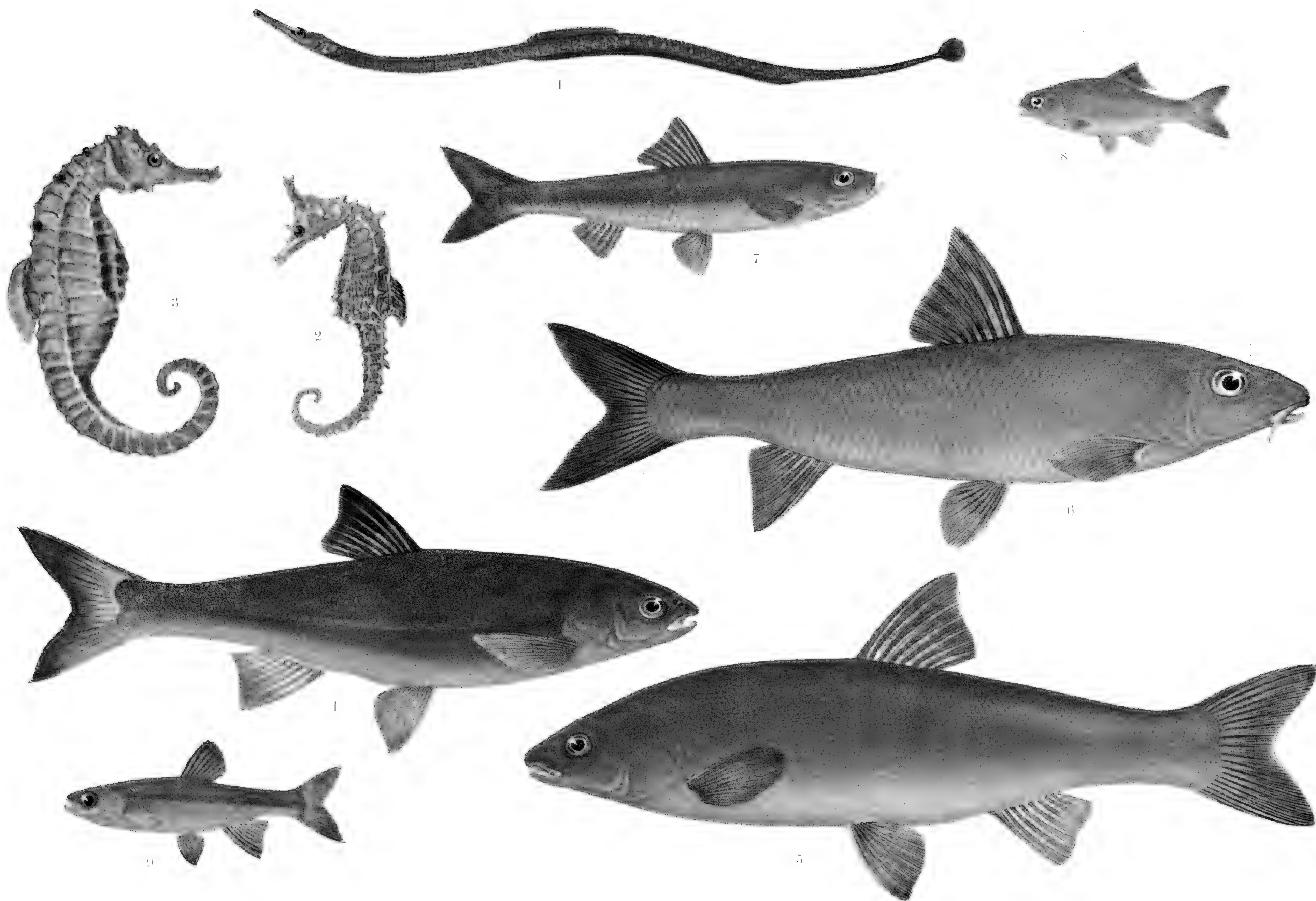
D. 10; A. 9; scales 42.
Body elongated and compressed; its length equal to 4¹/₅ times the depth, and to 4¹/₂ times the length of the head. Mouth small, obliquely directed, provided with short barbels on either side. Body covered with rather large cycloid scales. Body is bluish-brown above, and abdomen silvery. It grows to a length of about 100 mm.; spawning takes place from April to June. It is a fresh-water fish, especially abundant in Lake Biwa, where it is considered delicious as food in Winter.

Acheilognathus moriokae Jordan & Thompson
“ Tanago ”
PL. XIX, fig. 8. ×1

D. 12; A. 10; scales 37.
Body compressed and deep, its length equal to 2⁴/₅ times the depth and to 4 times the length of the head, which is short. Mouth small, provided with a pair of short barbels. Body covered with large cycloid scales. Body dark-blue, with a blackish-blue band along sides of caudal peduncle. This fish attains to about 40 mm. in length. Is a common fresh-water fish in Japan.

Zacco temmincki (Temminck & Schlegel)
“ Kawamutu ”
PL. XIX, fig. 9. ×1

D. 9; A. 12; scales 55.
Body moderately elongated and compressed, its length equal to 3.7 times that of head, and to 3.9 times the depth of head. Mouth rather wide, obliquely directed, no barbels nor teeth, except on pharyngeal bone which has 11 teeth on each side, arranged in three rows in the serial order 5, 4, 2,—2, 4, 5. Anal fin rays elongated. Body covered with somewhat large cycloid scales, head entirely scaleless. Lateral line complete. Back dark-blue, belly silvery, with a dark longitudinal band along sides. It attains to 150 mm. in length; spawns during May and June. This fish occurs in fresh-water in central and southern Japan.





ウ ツ ボ
Gymnothorax kikado (Temminck & Schlegel)
ナマダ（房州）、イダコ（三崎）
（第二十圖版 第一圖） ×1/2

體長は頭長の 6 1/6 倍、頭部及胴部の長さは尾部より稍短かし。體は延長し、強き皮膚にて全部覆はれ鱗なし。後頭は甚だ昂起せり。前鼻孔は管状をなし延長せるも後鼻孔は延長せずして圓形なり。口邊には稍大なる幅廣き齒を一行に存し、下顎には凡そ各側16個の齒あり。鋤骨には壓縮し得べき齒一列あり。背鰭は鰓孔上方より始まり皮膚の隆起せるものなり。體色は濃褐色又は黒色にして淡黄色の斑點を散在し、淡色及黒色の斑點は殆んど交互に不規則に並列せり。食食魚にして性甚だ猛烈、海藻のある岩礁間或は珊瑚礁等の淺海に棲息し若し之に嚙まるゝ時は甚だしき疼痛を感ず。南日本に普通に産し漁夫は之を食用に供するも小骨多く美味ならず。體長1米に達す。

モンガラドウシ
Microdonophis erabo Jordan & Snyder
（第二十圖版 第二圖） 1/2

胴部の長さは頭長の 4 5/6 倍、頭部及胴部の長さは尾部よりも稍短かし。體は延長し吻は短かく三角形を呈し縦扁す。眼高く小形なり。口裂は眼より遙か後方に至れり。鰓孔、胸鰭小形なり。齒は不等にして鋭からず、上下兩顎に一列あり。頭部に顯著なる孔なし。背鰭は通常にして鰓孔の直後より始まる。側線は明瞭なり。背鰭、腹鰭は連続せずして脊椎骨の後端突出す。之れ海蛇類の特徴なり。體色淡褐色にして、腹面白く體側には黄褐色の大形及小形斑紋ありて不規則に交互に排列せり。大形なる斑紋の大きさは頭長の1 1/6位なり。頭部にある斑紋は小形となり密接し色彩鮮明を缺く。背鰭には淡黒色の點を散在し殊に其前縁頗る黒し。胸鰭にも數個の小黒點あり。南日本の岩礁間に棲息し長さ600 耗に達す。屢々漁獲するも多からず。食用に供せず。

ウ ナ ギ
Anguilla japonica (Temminck & Schlegel)
（第二十圖版 第三圖） ×1/2

體長は頭長の 9 1/4 倍、體高の 18 2/3 倍、吻端より背鰭迄の距離の 3 1/4 倍あり。體は長く後方側扁し、皮膚中に埋没せる小形の鱗あり。透明にして明瞭に年輪を數ふる事を得。側線良く發達せり。頭部は長く圓錐形にして稍尖り眼は小形なり。齒は小形にして兩顎にあり。下顎の稍突出する事はアナゴ類と異なる點なり。背鰭は可成後方に始まり尾鰭、腹鰭と連絡せり。體色は棲息場及年齢、等に依り異れ其黒褐色を通常とし灰黒色、濃青色をなすものあり、秋季の下り鰻にては側面に著しき金屬光澤を増せり。本邦至る所の河川、湖沼に分布し、性食食、夜間出て食を求め蠕虫類、小蝦、小魚等を食す。親魚は秋季海に下り深海にて産卵す。春季稚魚の大群は海より溯上し淡水中にて成育す。淡水中に成長するものは鱗が多く通常 600 耗に達し最大 900 耗、體重1.8 疋になるものあり。雄は體長550 耗以上に達せず且河口或は淺海に棲息するもの多し。本邦淡水養殖魚中最も重要なるものにして各地に於て盛んに繁殖せらる。蒲焼として周年賞味す。

クロアナゴ
Leptocephalus kiusiuanus Jordan & Snyder
（第二十圖版 第四圖） ×1/2

胴部の長さは頭長の 1 1/6 倍、頭部、胴部の長さは尾部の長さに等し。吻長は眼徑の 1 3/4 倍あり。上顎は下顎より僅に長く吻は短し。主上顎骨は眼窩の後端に迄達

せり。胸鰭は先端尖り背鰭は胸鰭の前方より 2/3 の位置に於て初まれり。體色黒褐色にして背鰭、臀鰭の邊緣は黒色を呈す。尾鰭先端は僅に白色なり。胸鰭は灰色にして邊緣淡し。側線明瞭にして淡色の小孔の列口門より前方に 38 個あり。他種に見る如き白點なし。南方日本沿岸に多く體長は 1.2 米に達す。食用に供すれギアナゴ、ギンアナゴに稍劣れり。

ハ モ
Muraenesox cinereus (Forskål)
（第二十圖版 第五圖） ×1/2

胴部の長さは頭長の 1 1/2 倍あり。體はウナギ形にして肥厚し、背鰭、臀鰭は良く發達せり。背鰭は鰓孔上方より始まる。口は大きく齒は大形にして側扁し前方犬齒をなせり。鋤骨の齒は其前方後方に側突起を有し一列に並び、其中央のものは大形の犬齒をなす。側列にあるものは稍小形にして外方に彎曲せず。體は灰黒色にして下方白色なり。胸鰭は蒼白にして其下面は稍黒味あり。南日本に甚だ多く、食用とす。紅海、印度方面迄分布せり。東京以北にはなし。體長1.3米に達す。

ギンアナゴ
Anago anago (Temminck & Schlegel)
（第二十圖版 第六圖） ×1/2

體長は頭部及胴部の 1 1/20 乃至 1 1/10 倍、胴部は頭部の 1 1/6 倍あり。體は稍肥厚し吻短かく眼は大形にして吻長に等し。口裂は鰓孔の後端に迄達す。背鰭は胸鰭上方より始まる。側線部の孔はマアナゴにあるよりも小さく肛門より前方に約60あり。體色は淡褐色に著しき銀白の光輝あり。頭部後方に黒斑を有すれど偶體によりて其濃淡に著しき差異あり。胸鰭は蒼白又は黒く、背鰭及臀鰭は尾鰭によつて結合し幅廣き黒縁を有す。本邦各地内灣の砂泥底に棲息し多く延縄等にて漁獲せらる。體長は600 耗に達し關西方面にて多く賞味さる。

マアナゴ
Astroconger myriaster (Breyoort)
（第二十圖版 第七圖） ×1/2

胴長は頭長の 1 5/10 倍、尾部の長さは頭部及胴部の 1 2/3 倍なり。鰻より稍肥厚し胸鰭及鱗なし。腹鰭良く發達せり。頭部稍縦扁し吻尖り背鰭は胸鰭先端の上方より始まる。體色は濃褐色にして腹面白く背鰭及臀鰭には幅狭く黒縁あり。側線部の各孔は著しく白色にして其大きさは孔間の幅と同大なり。之等の孔は肛門の前方に 38 個あり。尾部に至りて漸次不明瞭となれり。頸部には體側に沿ひて、16 乃至 24 個の帶白色の點あり。眼の周圍吻部鰓蓋にも數多の白點あり。砂泥底に多く棲息し北海道より九州に至る内海に廣く分布せり。體長は1.3 米に達し食用魚として需要廣し。

ダイナウミヘビ
Ophichthus asakusae Jordan & Snyder
（第二十圖版 第八圖） ×1/2

胴の長さは頭長の 3 倍、尾部の長さは頭及胴の 1 2/3 倍あり。頭長は體高の 3 1/2 倍あり。體は甚だ長く圓筒状にして吻は稍尖れり。齒は小さく狭き帶狀をなせり。背鰭は胸鰭基底の中央上方より起り、前方高く後方は甚だ細く終れり。尾部は背鰭、臀鰭よりも突出し尾鰭なし。體色は殆んど黒く側面に灰色の不規則なる斑紋あり。頭部及下顎兩側には數個の黒點あり。背鰭前方に黒斑點あり。本邦南海地方砂泥底に産し性甚だ強猛なり。體長500 耗に達し食用に供せず。

Gymnothorax kidako (Temminck & Schlegel)
“Utubo”
PL. XX, fig. 1. ×1/2

Length of body equal to 6 1/5 times that of head; head and trunk taken together a little shorter than tail. Body stout, not greatly elongated, and covered with a thick, leathery skin; occipital region elevated owing to development of strong muscles which move lower jaw; anterior nostril tubular, posterior not so, dorsal fin beginning well in front of gill opening. Jaws usually narrow and armed with knife-like teeth besides molar; mandible with about 16 teeth on either side; vomer with one row of depressible teeth. Body dark brown or black in colour all over, with white or yellowish blotcheds or spots closely mixed with the dark ground colour.

Most active and voracious, often showing much pugnacity; lives in shallow waters near rocks and reefs on southern coast of Japan. It attains a length of 1 metre; is not much used as food.

Microdonophis erabo Jordan & Snyder
“Mongaradosi”
PL. XX, fig. 2. ×1/2

Trunk equal in length to 4 5/6 times that of head. Combined length of head and trunk is a little shorter than tail. Body rather slender; snout blunt, triangular, depressed; cleft of mouth extending well beyond eye; gill opening and pectral small; teeth sub-equal, not very sharp, in a single row above and below; no conspicuous pore on head. Dorsal moderate, inserted a little before gill opening; lateral line conspicuous. Colour brownish-olive, white below; body with large, round, brown spots of varying sizes, one large one often alternatng with two small ones; largest spots about one-fifth of head in size; spots on head much smaller, crowded, reducing the pale colour to reticulations, these markings faint in smaller specimens. Inhabits rocky bays of southern Japan, and grows up to 600 mm. in length; not used as food.

Anguilla japonica (Temminck & Schlegel)
“Unagi”
PL. XX, fig. 3. ×1/2

Length of body equal to 9 1/4 times that of head, and to 18 2/3 times depth of body, and to 3 1/4 times the length from snout to dorsal. Body elongated, compressed behind, covered with embedded scales. Head long, conical, moderately pointed, eye rather small; teeth small, sub-equal, in bands on either jaw.

Lower jaw projecting. Body variable in colour with age and locality, commonly being dark brown or dark blue above, whitish or yellowish below, with golden metallic lustre along the side especially in Autumn. Widely distributed in streams, and lakes and estuarine waters throughout Japan. Most voracious fish, and feeds on worms, shrimps, and small fish, chiefly at night. Spawns in deep sea; in spring enormous hordes of young eels known as elvers ascend streams; in Autumn the adult descends rivers to the sea in order to spawn. Female grows much larger than male. Females of 700 mm. in length are quite common, the maximum having a length of about 900 mm. and a weight of 1.8 kg.; males do not exceed 550 mm. in length.

This species is nowadays reared on a large scale, in fresh water ponds in Japan, the flesh when cooked is known as “Kabayaki” and is much esteemed by Japanese.

Leptocephalus kiusiuanus Jordan & Snyder
“Kuroanago”
PL. XX, fig. 4. ×1/2

Length of trunk equal to 1 1/6 times that of head; length of tail equal to 1 1/2 times combined length of head and trunk; length of snout equal to 1 3/4 times diameter of eye. Lower jaw rather shorter, snout shortish. Maxillary extending to posterior margin of eye. Pectoral fin pointed, dorsal inserted over end of second third of pectoral.

Body dark brown in colour, dorsal and anal

broadly edged with black, and tip of tail with a slight white margin. Pectoral dusky with a pale edge. Lateral line conspicuous, with small pale pores, 58 of them before vent, no white spot anywhere. This species inhabits southern coasts of Japan, and grows to 1.2 metres in length.

Muraenesox cinereus (Forskål)
“Hamo”
PL. XX, fig. 5. ×1/2

Length of trunk equal to 1 1/2 times that of head. Body thick, scaleless, eel-like. Dorsal and anal fins well developed, the former beginning at a point nearly above gill opening. Mouth very large, teeth in jaws enlarged and compressed, long canines present in front, vomer with long series of teeth, having strong canines in the middle; teeth of outer series rudimentary, not bending outwards. Body ashy-grey above in colour, belly silvery; dersal and anal with a broad black margin; pectoral pale, or suffused with a dusky colour on under side. It attains a length of 1.6 metres. Widely distributed in southern Japan southwards to the East Indies, abundantly occurring in muddy or sandy bays. It is widely used as food.

Anago anago (Temminck & Schlegel)
“Gin-anago”
PL. XX, fig. 6. ×1/2

Length of body equal to from 1 1/10 to 1 1/20 times combined length of head and trunk; length of trunk equal to 1 1/6 times that of head. Body rather thick; snout short, bluntish; eye very large, about as long as snout; cleft of mouth reaching about to posterior part of pupil. Dorsal fin beginning over pectoral fin. There are 60 small pores befor the anus.

Body light or brownish in colour, usually with golden metallic lustre; two dark shades behind eyes; pectoral fin pale or variously blakish, vertical fins with broad black margin. It grows to 600 mm. in length. It is found on all coasts of Japan, being especially common in southern waters; much used as food.

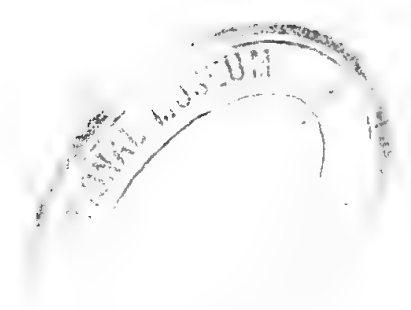
Astroconger myriaster (Breyoort)
“Ma-anago”
PL. XX, fig. 7. ×1/2

Length of trunk equal to 1 5/10 times that of head, length of tail is equal to 1 2/3 times combined length of head and trunk. Body eel-like; there is no ventral fin and skin is scaleless. Head depressed above, anteriorly pointed. Body dusky brown in colour, paler below a regular row of round whitish spots along sides of back beginning with a median spot, at the nape; these spots are found in no other species; lateral line very distinct, represented by row of close set white pores, about 38 of them before vent. Widely distributed throughout Japanese coasts, especially abundant in muddy bays. This fish grows to 1.3 m. in length, and similarly to the common eels, is much esteemed as food.

Ophichthus asakusae Jordan & Snyder
“Dainan-umihebi”
PL. XX, fig. 8. ×1/2

Length of trunk equal to 3 times that of head, length of tail equal to 1 2/3 times combined length of head and trunk; length of head equal to 3 1/2 times its depth. Body slender, cylindrical, mouth moderately large, snout rather sharp; teeth small all rounded or granular, in narrow bands. Dorsal inserted just before middle pectoral rather high, distinctly elevated in front, low on tail, which is pointed at tip; end of tail projecting beyond dorsal and anal fins. Body blackish above in colour, paler below, with vague pale blotches on sides, lower jaw with several black pores on each side. Sides and top of head also with black pores regularly arranged, dorsal with a large jet-black blotch in front. This fish inhabits muddy bays on the Pacific coasts of Japan, and grows to about 500 mm. in length; not used as food.





アヤトビトヲ

Cypsilurus poecilopterus (Cuvier & Valenciennes)

（第二十一圖版 第一圖）×¹/₂。

D. 12 to 13; A. 10; scales 42.

體長は頭長の4倍、體高の4¹/₂倍あり。頭長は吻長の5倍、眼徑の3倍あり。體は強固にして體高は吻端と前鰓蓋骨との距離に等し。吻は短く先端稍尖れり。胸鰭は背鰭後方に迄達せり。背鰭は臀鰭起部より前方に始まれり。胸鰭には多數の黒圓點を有し、其内側に於て横帶をなせり。臀鰭後半には凡そ3個の黒斑あり。暖海魚にして、本邦沿岸稀に漁獲され。體長300耗前後に達す。

サノマ

Cololabis saira (Prevoort)

（第二十一圖版 第二圖）×²/₃。

D. 11, 5; A. 13, 7; scales 118.

體長は頭長の7倍、體高の12倍あり。體は甚だ長く側扁し、兩端に於て次第に細くなれり。頭は稍大きく側扁し、吻の上縁の直線的外廓をなすは雌に多く雄にては僅に隆起せり。眼窩間隔は廣く扁平となる。口は稍大きく斜位、齒は頗る小さく、下顎は上顎より長し。背鰭は小さく後方にありて臀鰭に相對すれど臀鰭の方僅に前方より初まれり、極めて剝離し易き圓鱗あり。體の上方は濃青色にして下方銀白色、下顎先端は橙色を呈す。背鰭副鰭は淡青色にして暗褐の邊縁をなす。尾鰭は青味を帶ぶ。秋刀魚は秋季東北沖合に群をなして南下しつゝ産卵し、粘着性浮游卵を放出す。秋季末には房總沿岸より紀州に至り四國沖合に迄廻游することあり。約300耗に成長し1年にして成熟す。惣菜用として最も多く食用に供せらる。

アヨカマス

Sphyraena nigripinnis Temminck & Schlegel

（第二十一圖版 第三圖）×²/₃。

D. V, I, 9; A. I, 9; scales 115.

體長は頭長の4¹/₂倍、體高の8倍あり。體形は前種に極めて似たれ共、體長稍細長く、側線上の鱗は其數多し。

體色青綠色にして各鰭の邊縁は淡黑色を呈する點等に於て異れり。本邦東海及南海の砂底に棲息し體長400耗に達するものあり。前種より稍少し。近似種にヤマトカマス*S. japonica* Cuvier & Valenciennes あり。體は黃褐色にして、側線鱗125を數へ、腹鰭は背鰭より後方にあり。各鰭は蒼白なるを特徴とす。

サヨリ

Hyporhamphus sajori (Temminck & Schlegel)

（第二十一圖版 第四圖）×¹/₂。

D. 16; A. 17; scales 107.

上顎より測りたる體長は頭長の4³/₄倍、體高の9倍あり。體は甚だ長く側扁し頭稍大きく下顎は著しく突出せり。兩顎の齒は小さく三尖にして絨毛狀なり。背鰭及臀鰭は後方にして前者は後者の稍前方にあり。副鰭なし。尾鰭の下葉稍長く、細かき圓鱗は稍剝離し易し。體色背面は蒼黑色にして下方は銀白色、側面に青綠色の縦走帶あり。下顎の先端は美しき橙色を呈せり。東海及南海に多く體長300耗に達し肉質は淡白なり。

アヲヤガラ

Fistularia serrata Cuvier

（第二十一圖版 第五圖）×¹/₂。

D. 15; A. 14.

體長は頭長の2²/₃倍、胸鰭の部位にある體高と眼の長徑とは殆んど相等し。體形は後者に似たれど其異る點は體色一様に暗青褐色なることと吻上の二つの隆起縁の前半相離るることなり。體は一般に小さく、アカヤガラよりも稍淺海に棲息し餘り多からず。南日本に産す。

アヲヤガラ

Fistularia petimba Lacépède

（第二十一圖版 第六圖）×¹/₂。

D. 15; A. 14.

體長は頭長の2²/₃倍、吻長の3²/₃倍あり。眼の長徑は胸鰭の部位にある體高より稍長し。眼窩間は凹形をなす。吻上の二つの隆起は吻の前半に於て密接し平行に走れり。

吻の前方¹/₃を除く側縁は著しく鋸齒縁をなす。體は甚だ長く縦扁し體高よりも體幅廣し。體は無鱗なれど各部に骨板を有せり。頭部著しく長く突出し骨狀をなし其先端に小さき口あり。背鰭は後方にありて小さく臀鰭と相對せり。尾鰭は強く二又し其中央軟條は著しく延長せり。體色は殆んど一樣にして老成すれば暗赤褐色を呈し幼形の場合は鮮赤色、各鰭も赤くして甚だ美麗なり。本邦南海方面に多く稍沖合砂底地に棲息す。體長1700耗に達し肉美味なり。

トゲウヲ

Gasterosteus cataphractus (Pallas)

（第二十一圖 第七圖）×1。

D. I, I, I, 11 to 14; A. I, 8 to 11; 側板 33.

體長は頭長の3¹/₂倍、體高の4¹/₂倍あり。體は前後に尖り側扁し頭部小さく先端尖れり。主上顎骨は眼に迄達せず。尾柄は側扁す。體側は大形の骨質板にて被はる。其後方に至るに従ひ小形となり尾柄に於ては隆起縁となれり。體色、暗青色にして下方は銀白色に小斑點あり。本邦日本海沿岸、及東北地方の淡水及半鹹水に棲息し初夏の候、巢を作りて産卵す。體長100耗に達す。

ダツ

Tylosurus anastomella (Cuvier & Valenciennes)

（第二十一圖版 第八圖）×¹/₃。

D. 18; A. 23.

頭の後眼部の長さは腹鰭部の體高の 1¹/₃倍に等しく、眼徑の3¹/₃倍に相當す。體は甚だ長く、側扁し、尾柄細し。眼間隔は廣く、中央は淺き溝をなす。兩顎は甚だ長く齒は細く多數あり。鋤骨、口蓋骨には齒なし。鱗は小さく、薄く、側線は腹部を沿ふて走り、尾の中央に至れり。背鰭前方は昂起し、中央に至り凹めり。胸鰭は僅に長く、腹鰭は小さく體の略中央にあり。體の背部蒼青色、下方淡く幅狹き淡青色の一縦帶は體の背外廓に平行して走れり。南方淺海に分布し殊に九州には漁獲多し。

體長大なるものは1米に達す。

アカカマス

Sphyraena pinguis Günther

（第二十一圖版 第九圖）×¹/₂。

D. V, I, 9; A. 10; Scales 95.

體長は頭長の3¹/₄倍、體高の7倍、頭長は眼徑の2¹/₃倍あり。體は細長く殆んど圓筒形にして小なる圓鱗に覆はる。吻部は長く突出し尖り、頭部上方及側方には鱗を有す。下顎は僅に突出せり。兩顎及口蓋骨には不等形の鋭き齒あり。第一背鰭棘は鋭く、腹鰭よりも僅に後方より初まり第二背鰭は臀鰭よりも前方に初まれり。尾鰭は二又せり。體色褐色を帯びたる暗青色にして腹面銀白色なり。各鰭の先端淡色なり。淺海の砂底に棲息す。食食魚にして本邦東海、南海方面に多し。體長約250耗に達し肉は白色味ひ淡白にして良好なり。

トビウヲ

Cypsilurus agoo (Temminck & Schlegel)

（第二十一圖版 第十圖）×²/₃。

D. 13; A. 11; scales 52 to 58.

體長は頭長の4¹/₄倍、體高の5³/₄倍、頭長は眼徑の3倍あり。體は細長く、背面及腹面は廣し。尾柄は短かく側扁せり。頭部短かく背面扁平なり。眼は稍大形にして鰓蓋後縁よりも吻端近くにあり。眼の後方よりも前方にある脂眼瞼は良く發達せり。口は幾分小さく先端にありて下顎僅に突出せり。齒は絨毛狀兩顎にあり、幼時（凡30耗位）は下顎に鬚を有すれど成體に至れば消失す。背鰭は後方にありて臀鰭より前方にあり。胸鰭は甚だ長く尾柄に迄達せり。尾鰭は深く二又し上葉は短かくして下葉の¹/₃あり。體の上面鉛青色下方白色なり。飛魚は大洋の外海の上層を群游するものにして一度外敵に襲はるるか特別に驚愕する時は水中より飛躍し約150米の距離を空中滑走す。夏期沿岸近くに来りて産卵す。本邦沿岸普通に漁獲され肉は白く味淡白にして惣菜用に使用さる。

Cypsilurus poecilopterus (Cuvier & Valenciennes)
“Aya-tobiwo ”
PL. XXI, fig. 1. $\times \frac{1}{2}$

D. 12 to 13; A. 10; scales 42.
Length of body 4 times that of head, $4\frac{1}{2}$ times depth of body; length of head 5 times that of snout, 3 times diameter of eye. Body thick; its depth equals the distance between the extremity of the snout and the hinder margin of the pre-operculum; snout obtuse; somewhat pointed. Pectoral fin extends to end of dorsal. Dorsal originates far in advance of origin of anal. Pectoral with numerous ovate black spots, arranged in transverse bands on inner side of fin. Ventral fins white with about three blackish spots in middle of their posterior half. This fish seldom occurs in Japan, being chiefly found in the tropics.

Cololabis saira (Breyvoort)
“Sanma ”
PL. XXI, fig. 2. $\times \frac{2}{3}$
D. 11, 5; A. 13, 7; scaleless 118.

Length of body equal to 7 times that of head, and to 12 times depth of body. Body elongated, compressed, gradually tapering anteriorly and posteriorly. Head rather large, compressed; snout nearly straight in profile, with pointed tip. Mouth rather small, slightly oblique; jaws with feeble pointed teeth; lower jaw longer than upper. Dorsal short, inserted far posteriorly, anal beginning slightly more anteriorly than dorsal, caudal deeply forked. Scale cycloid, deciduous, and continuous to base of caudal. Body deep purplish-blue on back, lower half being abruptly silvery. On the back and sides of head greenish shades more or less predominate; dorsal and its finlets light-bluish, with dark-brown margin; caudal bluish. The fish form huge schools off-shore, migrating southwards in Autumn from northern coast of Japan, and laying floating adhesive eggs in large numbers. It attains to a length of about 300 mm. and matures in one year only. Much used as food in Japan.

Sphyraena nigripinnis (Temminck & Schlegel)
“Ao-kamasu ”
PL. XXI, fig. 3. $\times \frac{2}{3}$

D. V, I, 9; A. I, 9; scales 115.
Length of body equal to $4\frac{1}{2}$ times that of head, and to 8 times depth of body. Body very similar in form to former species but distinguished from other species of *Sphyraena* by being bluish-green above; all the fins tinged with darkish colour, and with numerous scales, on lateral line, etc. Occurs in sandy shallow waters in southern Japan.

Hyporhamphus sajori (Temminck & Schlegel)
“Sayori ”
PL. XXI, fig. 4. $\times \frac{1}{2}$

D. 16, A. 17; scales 106.
Length of body (measured from tip of upper jaw) equal to $4\frac{3}{4}$ times that of head, and to 9 times depth of body. Body very elongated, and compressed. Head moderately large, snout pointed; lower jaw much longer; teeth in jaws small and tricuspid, in narrow, villiform bands. Body dark-blue above, silvery below; has a bluish lateral stripe which broadens beneath dorsal fin; tip of lower jaw deep orange. This species inhabits southern waters of Japan, and attains to a length of 300 mm. Widely used as food.

Fistularia serrata Cuvier
“Ao-yagara ”
PL. XXI, fig. 5. $\times \frac{1}{2}$

D. 15; A. 14.
Length of body equal to $2\frac{2}{3}$ times that of head, and depth of body at pectoral equal to diameter of eye. Body subsimilar in form to former species but distinguishable from the latter by having deep bluish-brown colour, and 2 middle ridges on upper surface of snout separate from each other; this species is shorter in size, usually attaining a length of about 600 mm. Inhabits rather shallow waters in southern Japan, but is not commonly found there.

Fistularia petimba Lacépède
“Aka-yagara ”
PL. XXI, fig. 6. $\times \frac{1}{2}$

D. 15; A. 14.
Length of body equal to $2\frac{2}{3}$ times that of head, and to $3\frac{3}{5}$ times that of snout; diameter of eye rather longer than depth of body at pectoral portion. Inter-orbital space concave; 2 middle ridges on upper surface of snout run close and parallel to each other along anterior half of length of snout. Body extremely elongated, much depressed, broad rather than deep. Head very long, anterior bones of skull much produced, forming a long tube, which terminates in narrow mouth. Caudal forked, middle rays produced in a long filament. Body nearly uniformly reddish-brown in older specimens and light red in young; fins reddish. Inhabits warm sandy bottoms in southern waters, and attains to about 1700 mm. in length. Flesh tastes very delicious. Not often found in Japan.

Gasterosteus cataphractus (Pallas)
“Togeowo ”
PL. XXI, fig. 7. $\times 1$

D. I, I, 1, 11 to 14; A. I, 8 to 11; Lat. Plate 33.
Length of body equal to $3\frac{1}{2}$ that of head, and to $4\frac{1}{2}$ times depth of body. Body tapering towards both ends, and compressed; head small and pointed; lateral skin covered with bony plates, which are gradually reduced in size posteriorly; a distinct caudal keel present. Body dark-greyish or bluish above, silvery below, with a few dark punctuations. It is a fish of northern Japan, ascending streams from sea at the spawning season which takes place in early Summer. It has a peculiar habit of making a nest of weed and mud; attains to about 100 mm. in length.

Tylosurus anastomella (Cuvier & Valenciennes)
“Datu ”
PL. XXI, fig. 8. $\times \frac{1}{2}$

D. 18; A. 23.
Post-orbital part of head $1\frac{1}{5}$ times depth of body, and $3\frac{1}{5}$ times diameter of eye. Body much elongated, strongly compressed; caudal peduncle slender, without lateral keel. Inter-orbital space with a wide, shallow channel along middle. Beaks

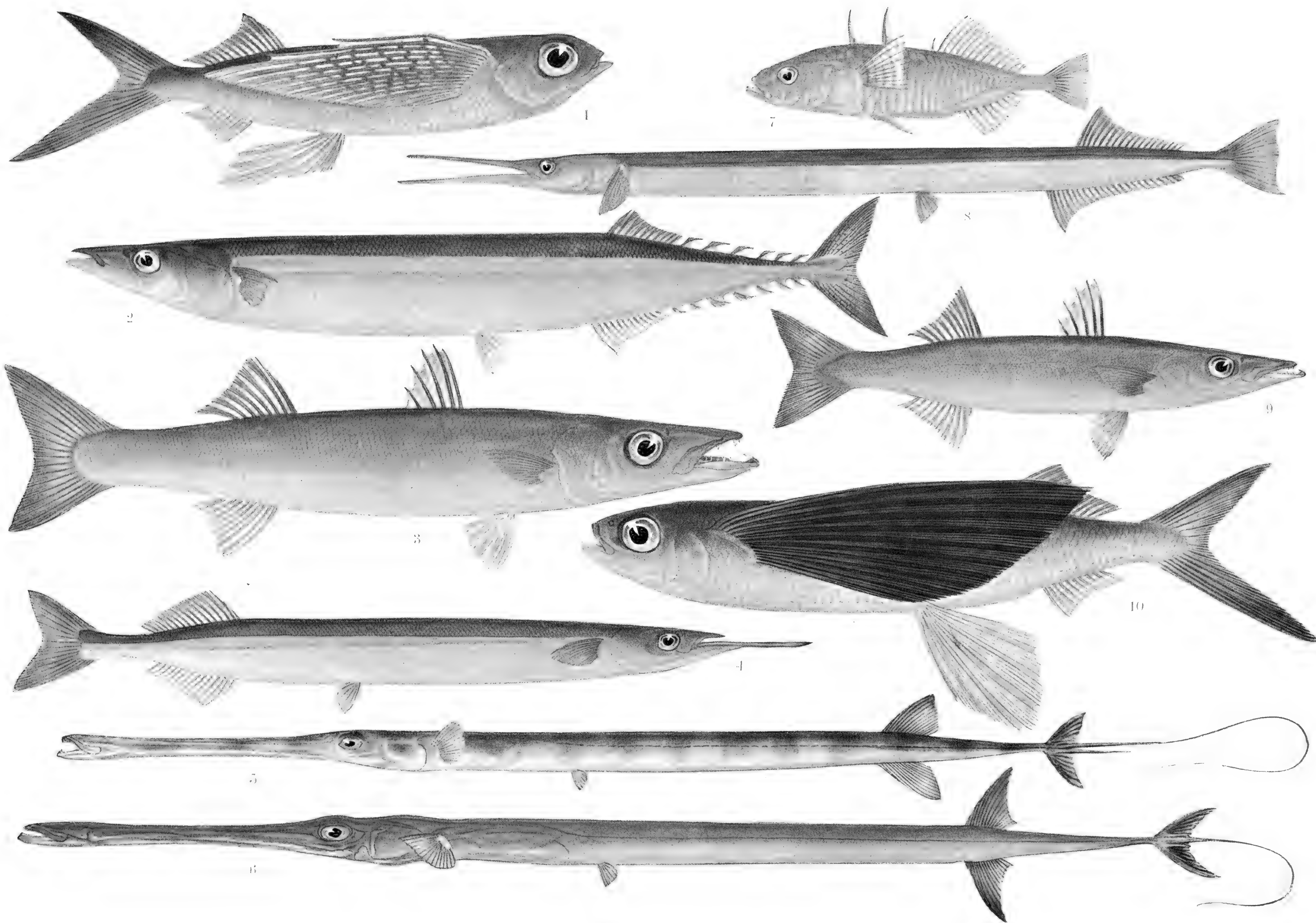
very long as is usual in the group which includes this species. Teeth rather slender, no teeth on vomer or palatines. Scales small, thin; lateral line running along side of belly, becoming median on the tail. Dorsal fin a little elevated anteriorly, with weakly concave free margin; pectorals moderately long; ventrals small, inserted behind middle of body. Bones greenish. Back deep-blue, lighter below; there is a broad blackish margin to dorsal fin. A fish of southern Japan. Widely consumed, especially in Kyusyu.

Sphyraena pingius (Günther)
“Aka-kamasu ”
PL. XXI, fig. 9. $\times \frac{1}{2}$

D. V, I, 9; A. 10; scales 95.
Length of body equal to $3\frac{1}{4}$ times that of head, and to 7 times depth of body; length of head equal to $2\frac{1}{5}$ times diameter of eye. Body elongated, sub-cylindrical, covered with small cycloid scales. Head very long, pointed, pike-like, scaly above and on side. Lower jaw considerably projecting; large, sharp teeth of unequal size in both jaws and on palatines. Body light green with brownish colour above, silvery below; all fins pale. An active and voracious fish, inhabiting the warm seas of Japan; attains to about 250 mm. in length; tastes delicious.

Cypsilurus agoo (Temminck & Schlegel)
“Tobi-uwo ”
PL. XXI, fig. 10. $\times \frac{2}{3}$

D. 13; A. 11; scales 52 to 58.
Length of body equal to $4\frac{4}{7}$ times that of head, and to $5\frac{1}{5}$ times depth of body; length of head 3 times diameter of eye. Body elongated, back and belly broad, caudal peduncle short, much compressed. Head rather short, flattish above; eye large, mouth small, oblique; lower jaw longer; teeth in jaws villiform, in a narrow band; no barbels on mandible except in young fry. Pectoral high and very large; caudal deeply forked, upper lobe being about $\frac{1}{9}$ of lower in length. Body deep-blue above, silvery below, pectoral dark lead-blue on inner surface, lighter on lower part. Flying fish are a surface-living, gregarious species in tropical waters, spawning in Summer near the shore; a distance of 150 m. may be covered while flying. Widely consumed as food.





ボ　　ラ
Mugil cephalus Linné
(第二十二圖版　第一圖)　　×²/₅

D. IV, 9; A. III, 8; scales 38.

體長は頭長の4¹/₅倍、體高の3³/₄倍、頭長は眼徑の3¹/₅倍あり。　體は稍長く、後方側扁し、頭部短かく廣く僅かに縦扁す。上外廓は殆んど直線なるも下外廓は強く彎曲せり。　眼は前方にありて高く廣き脂嚢を有し冬季に於て良く發達す。　吻は短かく鈍圓をなし主上顎骨は前眼窩骨に覆はるれど前眼窩縁に達せず。　圓鱗は稍大にして各鱗の中央は深く窪みて溝を作り爲に各鱗は縦走線を作り、體は濃青色にして腹面銀白色なり。體側の縦走線は明らかに濃青色を呈せり。　秋季末稍深所にて産卵し春季50乃至100耗の稚魚は沿岸或は河口に群游し溯上す。泥中の餌をとりて成長し夏季終りより秋早く海に下る。二歳三歳魚は冬季群をなして沿岸を游泳する事あり。本邦廣く分布し體長400耗に達す。

メ　　ナ　　ダ
Liza menada Tanaka
(第二十二圖版　第二圖)　　×²/₅

D. IV, I, 8; A. III, 8; scales 37.

體長は頭長の4¹/₁₀倍、體高の凡そ5倍、頭長は眼徑の6¹/₅倍、吻長の3³/₄倍あり。　體形は前者に似たれども其特徴を挙げれば、體長に比して體高及頭長は短かき事、眼隔は眼徑に比し著しく廣くして扁平に近く其中央部に隆起縁なき事、上顎骨の部分膨起せる事、胸鰭後端は第一背鰭起部より遙に遠ざかれる事、背面横斷面に凸形を呈せるも背中線に於て突起を有せざる事等は本種の特徴なり。　背部濃青色腹部銀白色にして各鱗列上に縦線あり。老成せるものは吻端朱色を帯びるものあり。東海及北海に産し體長500耗に達す。

トウゴロウイワシ
Atherina bleekeri Günther
(第二十二圖版　第三圖)　　×1

D. VI, I, 10; A. I, 13; scales 45.

體長は頭長の4¹/₂倍、體高の5³/₄倍、頭長は眼徑の3倍、吻長の4倍あり。　體は稍長く側扁し圓鱗を以て覆はれ口は斜位、兩顎は殆んど等長なり。　主上顎骨は前眼窩縁を過ぐ。　齒は小形にして兩顎及鋤骨にあり。　背面の鱗は頭部に迄分布し眼窩後縁に迄達せり。　鱗の後縁は鋸齒狀をなし黒色を呈す。　頭部及吻の先端は黒く、體側には銀色の縦帶あり。　本邦東海、南海沿岸に普通に産し體長は150耗に達す。

マツカサウヲ
Monocentris japonicus (Houttuyn)
(第二十二圖版　第四圖)　　×1

D. V, 12; A. 10; scales 13, 2.

體長は頭長の2¹/₅倍、體高の1²/₅倍、頭長は眼徑の3²/₅倍にして眼徑と吻長と略相等し。　體は短かく、高く側扁し。頭部大形なり。　吻は頗る短かく其外廓は垂直的になれり。　口は大きく廣く僅に斜位兩顎及口蓋骨に絨毛齒あり。　背鰭棘は鋭く交互に左右に偏せり。　腹鰭廠良く發達し側方に突出し或は體側に附着せしむる事を得。

鱗は其邊緣鋸齒を呈し、殊に腹側に於て隆起縁をなせり。　體は黄色にして各鱗は幅狭き褐色の邊縁を有せり。東海、九州、日本海に産す。　下顎に於ける一對の發光器は發光細菌の寄生に寄るものなり。

ヒ　　メ　　ジ
Pseudupeneus bensasi (Temminck & Schlegel)
(第二十二圖版　第五圖)　　×1

D. VII, 9; A. 7; scales 30.

體長は頭長の3¹/₄倍、體高の3¹/₂倍なり。　體は長く、側扁し、口は稍小さく、先端にあり。　主上顎骨は眼の前縁を超へて後方に達す。　兩顎に小齒あり。　顎に2個の黄色の長き鬚ありて、之は前鰓蓋骨の後縁に達す。　鱗は大きく、僅に横鱗を呈す。　側線は完全にして高く、背外廓と平行して走れり。　背鰭は2基にして、互によく離れ前背鰭は弱き棘を有し、其最前のもの最も長く、後部に至るに従ひ漸次に其長を減ず。第二背鰭及臀鰭は互に對在す。　體は美しき淡赤色にして、2背鰭と尾鰭上半とはは紫色の斜走線を有す。　南日本に普通にして、美味なり。

タカサゴヒメジ
Upeneus pleurospilos Bleeker
(第二十二圖版　第六圖)　　×1

D. VIII, 9; A. I, 7; scales 29.

體長は頭長の3倍、體高の2¹/₁₀倍、頭長は眼徑の4¹/₂倍、吻長の1⁴/₅倍なり。　體は稍肥厚し、後頭骨部に於て僅に昂起せり。第一背鰭は稍強き棘を具へ、就中、中部のもの最長し。第二背鰭は頗る低く、殆ど同大の軟條を有し、臀鰭と對在す。其形は是等兩鰭共相同じ。　鰓の鬚は短く、眼の前縁の下方に達す。　體は美しき淡赤色にして、眼を貫きて美青色の數條の線あり。第二背鰭及臀鰭には淡赤色及淡黄色の線交互に排列す。　稍少き魚なれど可なり美味なり。

トラヒメジ
Upeneus tragula Richardson
(第二十二圖版　第七圖)　　×1

D. VII, 8; A. 7; scales 30.

體長は頭長の3¹/₂倍、體高の4倍なり。頭長は眼徑の4倍、吻長の2²/₅倍なり。　體は長く、側扁し、上外廓は一樣に曲れり。　吻は稍長く、尖り、上顎は下顎よりも僅に短し。　齒は絨毛齒にして、顎、鋤骨及口蓋骨にあり。　鰓の鬚は前鰓蓋骨にまで達せず。　體色は淡褐色にして、褐色の一縦走帶は吻より初まり、眼を過ぎて體側を走り、尾鰭基底に達す。垂直鰭は暗褐色の點を多く具ふ。　鰓の部分は暗褐色なり。　南日本にありて、遠く東印度諸島にまで分布す。

Mugil cephalus Linné
“Bora”
PL. XXII, fig. 1.　　×²/₅

D. IV, 9; A. III, 8; scales 38.

Length of body equal to 3³/₄ times depth of body, and to 4¹/₅ times that of head. Body rather elongated, compressed posteriorly, head short, broad, slightly depressed, upper profile nearly straight, but the lower strongly curved; eye anterior, high up, with broad adipose eyelids; snout short, broadly rounded when viewed from above, maxillary entirely covered by pre-orbital, not extending to anterior rim of eye. Scales cycloid; no lateral line; each scale with a deep furrow in the middle, so as to form lateral streaks. Body indigo-blue above in colour, silvery below, several longitudinal streaks of deep bluish colour. Spawning occurs in Autumn, and young fry, 50—100 mm. in length, ascend brakish water and streams in Spring, descending in early Autumn. Huge shoals of this fish appear in bays and shallow waters; widely distributed throughout Japanese coast, and grows to 400 mm. in length. It is widely used as food.

Liza menada Tanaka
“Menada”
PL. XXII, fig. 2.　　×²/₅

D. IV, I, 8; A. III, 8; scales 37.

Length of body equal to 4¹/₁₀ times that of head, and to 5 times depth of body; length of head equal to 6¹/₅ times diameter of eye, and to 3³/₄ times length of snout. Body elongated, compressed; caudal peduncle short, high, much more compressed. The fish closely resembles to Mugil cephalus, but is distinguished by its elongated body; broadly rounded opercle; shorter snout; larger angle of lower jaw when viewed from below; maxillary being concealed under pre-orbital anteriorly, and being posteriorly arched downwards and exposed; reddish lips, etc. Body deep blue above, silvery below, base of each scale dark, forming longitudinal rows of spots. Occurs abundantly on northern coasts of Japan and measures about 500 mm. in length.

Atherina bleekeri Günther
“Tōgoro-iwasi”
PL. XXII, fig. 3.　　×1

D. VI, I, 10; A. I, 13; scales 45.

Length of body equal to 4¹/₂ times that of head, and 5³/₄ times depth of body; length of head equal to 3 times diameter of eye, and to 4 times length of snout.

Body elongated, compressed, covered with cycloid scales of moderate size; mouth oblique; jaws sub-equal; maxillaries reaching just past anterior orbital rim. Teeth very small, in bands on jaws and vomer. Scales on back extending to posterior margin of eyes beyond occiput, a few scales behind and below eye; scales on back obtusely denticulated, and broadly edged with blackish or dusky colour; this more pronounced on back when viewed from above. Top of head and snout black; lateral band silvery, dark above; inhabits warmer waters of Japan, and grows to about 150 mm. in length.

Monocentris japonicus (Houttuyn)
“Matukasauwo”
PL. XXII, fig. 4.　　×1

D. V, 12; A. 10; scales 13, 2.

Length of body equal to 2¹/₅ times that of head, and to 1²/₅ times depth of body; length of head equal to 3²/₅ times diameter of eye or length of snout. Body short, deep, compressed, head large, deep, with steep profile; eye large, high, lateral; snout short, with vertical profile, maxillary ex-

tending to vertical through posterior margin of pupil. Mouth rather wide, slightly oblique; teeth in jaws and on palatines villiform. Dorsal spines inclined alternately to one side of body or the other; ventral spine very strong. Scales large, with strongly denticulated margin, and an elevated ridge ending in a spine; those of ventral strongly keeled in middle part.

Body and fins ochreous-yellow, each scale with narrow brown margin forming polygonal reticulations on body; sub-orbital and mandibular parts dark brown. The fish inhabits shallow sandy bays in Japan, attaining to about 120 mm. in length. Two luminous organs on mandible are actually caused by phosphorescent bacteria living symbiotically.

Pseudupeneus bensasi (Temminck & Schlegel)
“Himedi”
PL. XXII, fig. 5.　　×1

D. VII, 9; A. 7; scales 30.

Length of body equal to 3¹/₄ times that of head, and to 3¹/₂ times depth of body. Body elongated, compressed; mouth rather small, terminal, maxillary extending beyond anterior border of eye; jaws with small teeth; two long yellow barbels at chin extending to posterior border of pre-opercle. Scales large, slightly ctenoid, lateral line continuous, high, concurrent with back. Dorsals two, well separated, anterior one with weak spines graduated in length, the anterior ones generally being the largest; second dorsal and anal opposite each other. Body bright reddish, two dorsals and upper half of caudal with several oblique lines of purplish colour. Common in southern Japan. Has a fairly good flavour as food.

Upeneus pleurospilos Bleeker
“Takasagohimedi”
PL. XXII, fig. 6.　　×1

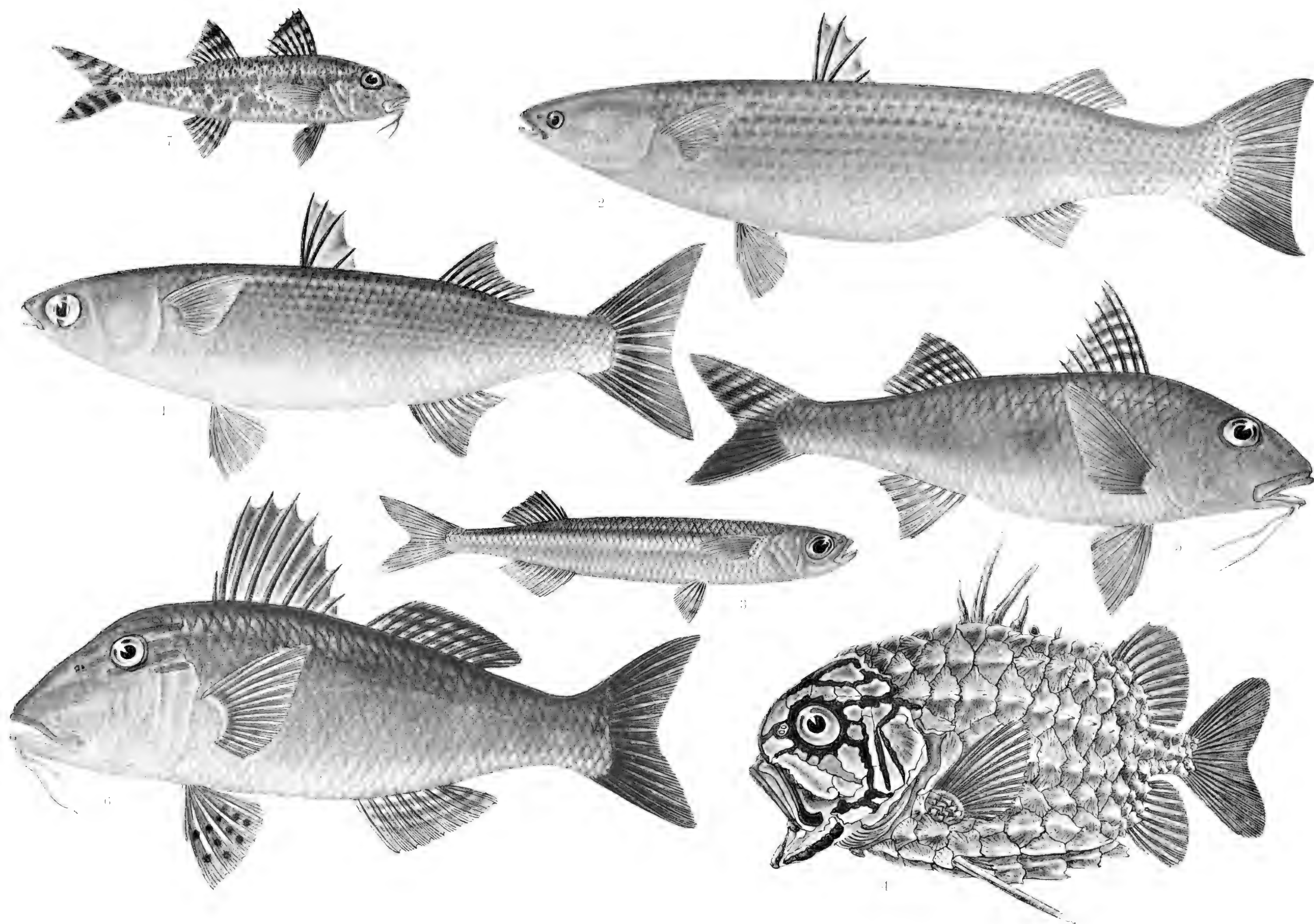
D. VIII, 9; A. I, 7; scales 29.

Length of body 3 times that of head, 2¹/₁₀ times depth of body; head 4¹/₂ times diameter of eye, 1⁴/₅ times length of snout. Body rather thick, a trifle elevated at occiput. First dorsal has rather stout spines, of which middle ones are longest, second dorsal much lower, with subequal rays, opposite anal, to which it is sub-similar in form. Barbel beneath mouth short, barely reaching below anterior border of eye. Body bright reddish, several short lines of azure colour extending through eye; soft dorsal and anal with alternate lines of reddish and yellowish colour. Occurs rather rarely, it is esteemed as fairly palatable as food.

Upeneus tragula Richardson
“Torahimedi”
PL. XXII, fig. 7.　　×1

D. VII, 8; A. 7; scales 30.

Length of body 3¹/₂ times that of head, 4 times depth of body; head 4 times diameter of eye, 2²/₅ times length of snout. Body elongated, compressed, upper contour evenly curved. Snout rather long, pointed; lower jaw rather the shorter; teeth villiform, in broad bands in jaws, and on vomer and palatines; barbel not extending quite as far posteriorly as pre-opercle. Colour brownish; a brown lateral stripe from snout through eye along side of body to base of caudal; vertical fins profusely provided with dark brown spots. Mental barbels dark brown. Is a fish found in southern Japan, extending southwards to the East Indies.



キンメダイ
 Beryx splendens Lowe
 （第二十三圖版 第一圖） × 1⁄2
D. IV, 13; A. IV, 27 to 29; scales 74.

體長は頭高の3倍、體高の23⁄5倍あり。體高と頭長とは略相等し。頭部稍大にして吻は短かく、眼は著しく大形にして金色を呈する故に此名あり。前鰓蓋縁は鋸齒状をなし鰓蓋骨には一棘あり。背鰭と胸鰭の長さは殆んど等しく、臀鰭は背鰭後端の對稱より初まる。尾鰭長く且頗る深く二又せるを特徴とす。鱗は大きくして其表面に小突起を有せり。Lowe氏は色彩に就て述べて曰く、捕獲したる瞬間未だ生きて居る時は側線下の腹部は銀白色にして、各鰭、頭部及背部の隆起、口内、下顎、眼の直下は深紅色なれど、死すれば直ちに全體が鮮紅色となると稱せり。深海魚にして300乃至40米の岩礁に棲息し、本邦太平洋沿岸に分布せり。體長350耗に達し肉は稍美味なり。

ヒウチダイ
 Hoplostethus mediterraneus Cuvier & Valenciennes
 （第二十三圖版 第二圖） × 1⁄2
D. VI, 13 to 14; A. III, 9 to 10; scales 28 to 29.

體長は頭長の23⁄5乃至22⁄3倍、體高の2乃至21⁄5倍あり。體は卵圓形にして稍高く、且側扁し、小櫛鱗を以て覆はる。頭は高く大きく、又眼大なり。口は斜位、主上顎骨は眼の後縁を僅に過ぐ。下顎は上顎より長し。鰓蓋の上方、側線の初まる所及鰓蓋下縁に各1本の強き棘あり。眼より鰓蓋に至る間に3個の骨質隆起あり。齒は小さく、兩顎は廣き齒帶をなす。鋤骨齒なし。背鰭は鰓孔の少しく後方にあり。

體は淡赤色にして體長30耗に達す。南方暖海に分布すれど餘り多からず

イツトウダイ
 Holocentrus spinosissimus Temminck & Schlegel
 （第二十三圖版 第三圖） × 1⁄2
D XI, 13; A. IV, 9; scales 37 to 38.

體長は頭長及體高の23⁄5倍あり。體は稍長く適度に側扁す。背外廓は稍昂起し腹外廓は殆んど直線形なり。鰓蓋骨の上部及前鰓蓋骨の隅角には鋭き棘あり。其下方邊縁及下眼輪、眼前骨部、前鰓蓋骨部、前鰓蓋骨部、下鰓蓋骨部、後頭骨部、肩帶の邊縁は鋸齒をなす。眼は頗る

大きく、鱗は覆瓦狀に並び其後縁は棘狀を呈す。體は鮮紅色にして、鱗上に白き縦線走れり。體長20）耗にして南日本に産す。

チカメキントキ
 Priacanthus japonicus Cuvier & Valenciennes
 （第二十三圖版 第 四圖） × 2⁄3
D X, 12; A. III, 12; scales 56.

體長は頭長の23⁄5倍、體高の2乃至22⁄3倍あり。頭長は眼徑の24⁄5倍、吻長の21⁄2倍に等し。體は長橢圓形にして、前鰓蓋骨に棘あり。眼隔は凸形を呈すれど、頭蓋骨は凹窪をなす。後鼻孔は廣く開孔し前鼻孔は小さし。齒は小さく、尖り、鋤骨及口蓋骨に齒あり。背鰭棘は強く、後方に至るに従ひ長し。尾鰭截形なり。鱗は櫛鱗にして堅し。

體色赤く、下方淡く、背鰭、腹鰭、臀鰭、尾鰭後縁黒し。體長200耗に達し、南方の魚にして少し。

ギンメ
 Polymixia japonica Günther
 （第二十三圖版 第五圖） × 1⁄2
D. V, 32; A. IV, 16; scales 50.

體長は頭長の3倍、體高の23⁄5倍に等しく、頭長は眼徑の29⁄1倍、吻長の44⁄5倍に等し。體は稍長く、側扁し頭部殊に眼は甚だ大形なり。吻は短かく急峻にして先端鈍形なり。口は稍大きく上顎は下顎より僅に長し。主上顎骨は眼の僅か後方迄延長せり。兩顎に存する齒は絨毛狀にして幅の狭き齒帶をなす。下顎に存する鬚は長く腹鰭基底近くに迄達す。體色背部は淡青色 下方は銀白色 背鰭前部の邊縁及臀鰭前部の中央は帶黑色なり。南日本に産し體長300耗に達す。産額少し。

ヨロヒダイ
 Ostichthys japonicus (Cuvier & Valenciennes)
 （第二十三圖版 第六圖） × 1⁄2
D XIII, 13; A. IV, 11; P. 17; V. I, 7; scales 28.

體長は頭長の23⁄5倍、體高の21⁄4倍あり。頭長は眼徑の31⁄5倍あり。體は卵形、適度に側扁し頗る強き櫛鱗を以て覆はる。眼は大きく口は斜位、下顎は上顎より長し。體色は一樣に美紅色にして斑紋なし。南日本の深き岩礁附近に棲息し鹿児島にて賞味す。體長300耗に達し頗る強固なり。

Beryx splendens Lowe
 “Kinme-dai”
PL. XXIII, fig. 1. × 1⁄2

D. IV, 13; A. IV, 27 to 29. scales 74. Length of body equal to 3 times that of head, and to 23⁄5 times depth of body. Body oblong, compressed, its height equal to length of head; head large, snout short, opercular bone serrated; opercle has a spine. Insertion of anal under end of dorsal; caudal deeply forked. Scales large, their whole surface spinous, with short points or prickles, giving a general roughness to the touch. In his work on the fishes of Madeira, Lowe described the colour of the fish as follows; “At the moment of capture, whilst this fish is yet alive, the whole body beneath the lateral line is of a pure, resplendent, silvery white; the fins alone, and merely the ridge of the back and head, the inside of the mouth, the lower jaw, and parts beneath the eye being of the brightest scarlet, contrasting strongly with the pure silver of the whole sides and belly, which only after death turn iridescent rosy, or sometimes rich golden scarlet. The hind parts of the dorsal and the ventral fins are transparent; the iris is pale scarlet. There is a watery transparency about the scarlet of the back in this state perfectly inimitable by art.” It is a deep-sea fish living at a depth of about 300—400 metres, in distribution ranging from the middle part of Japan to more northern waters. Grows to 350 mm. in length; palatable as food.

Hoplostethus mediterraneus Cuvier & Valenciennes
 “Hiutidai”
PL. XXIII, fig. 2. × 1⁄2

D. VI, 13 to 14; A. III, 9 to 10; scales 28 to 29. Length of body equal to 23⁄5 to 22⁄3 times that of head, and to 2 to 21⁄5 times depth of body. Body ovate, very deep, compressed, covered with small ctenoid scales; its profile evenly curved. Head large and deep; eye very large, lateral and high up; mouth oblique, maxillary extending a little beyond posterior margin of eye; lower jaw the longer. Above operculum, at origin of lateral line there is a strong spine, and another at end of pre-operculum below; 3 bony ridges cross over from eye to pre-operculum; teeth small, fine, and in broad bands in jaw; no vomerine teeth. Dorsal inserted a short distance behind gill-opening, the spinous fin graduated to the last spine which is the longest. Body light-pinkish.

Holocentrus spinosissimus Temminck & Schlegel
 “Itto-dai”
PL. XXIII, fig. 3. × 1⁄2

D. XI, 13; A. IV, 9; scales 37 to 38. Length of body equal to 22⁄3 times that of head, and to 22⁄3 times depth of body. Body rather oblong, moderately compressed; ventral outline nearly straight, back little elevated, tail very slender. Operculum with a strong spine above, and also with strongly serrated edge below; a strong spine at angle of pre-opercle. Orbital ring, pre-orbital, pre-opercle, inter-opercle, sub-opercle, occiput, and shoulder girdle with edges sharply

serrated. Eye excessively large. Scales moderate, closely imbricated, the posterior margin strongly spinous. Body chiefly bright-red, with white longitudinal streaks along rows of scales; fins light-red. Attains to about 200 mm. in length, living in southern waters in Japan.

Priacanthus japonicus Cuvier & Valenciennes
 “Tikame-kintoki”
PL. XXIII, fig. 4. × 2⁄3

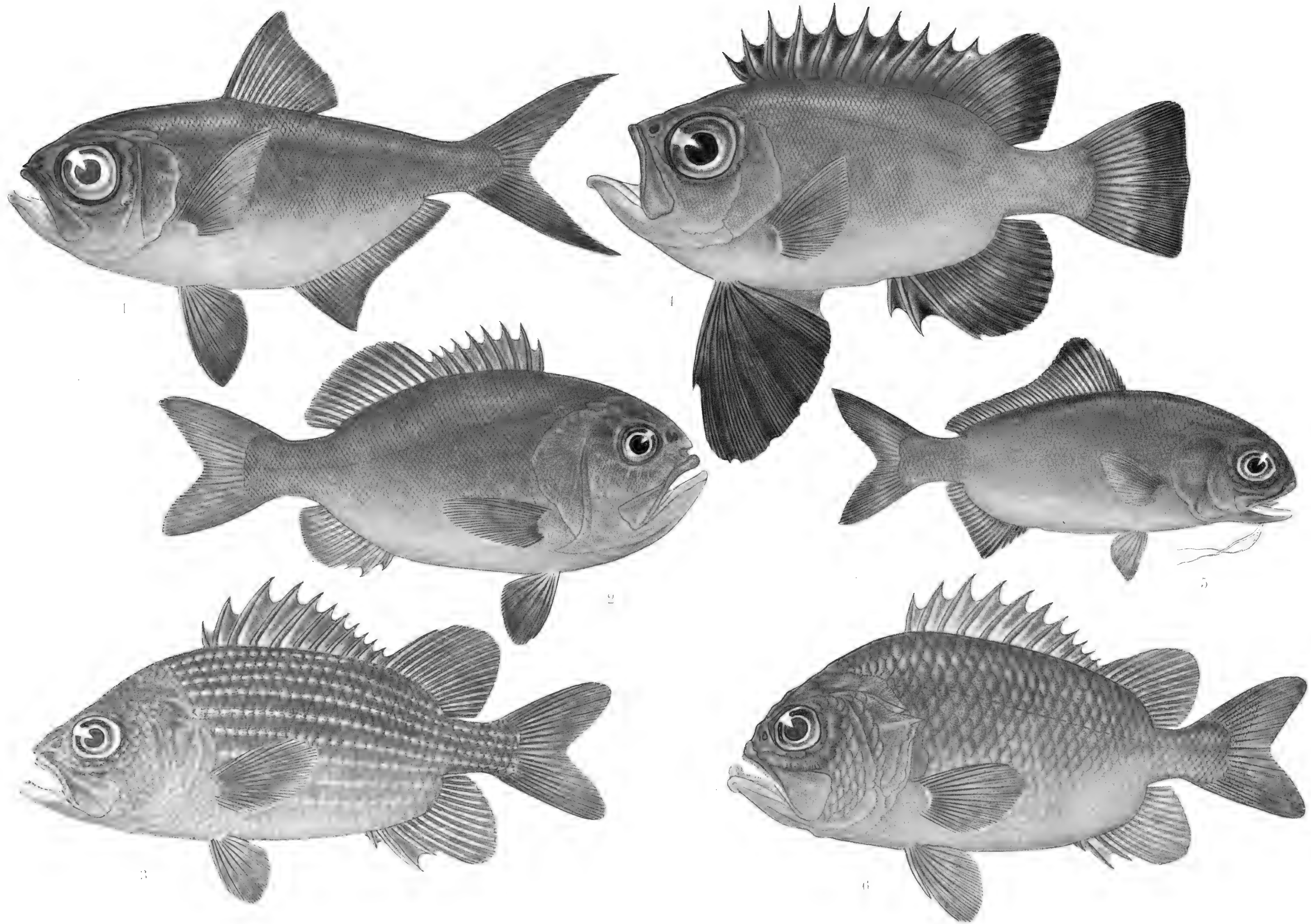
D. X, 12; A. III, 12; scales 56. Length of body equal to 22⁄3 times that of head, and to 2 to 21⁄3 times depth of body; length of head equal to 24⁄5 times diameter of eye, and to 31⁄2 times length of snout. Body oblong; pre-opercle with a spine at angle; inter-orbital area being externally, transversely convex, the cranial bones themselves being transversely concave; posterior nostril widely open, anterior one much smaller. Teeth small, pointed, in two rows in both jaws, lacking at pre-maxillary symphysis; vomer and palatines toothed. Dorsal with strong, not flexible spines, which gradually increase in length to the last. Caudal truncated. Scales rather hard, ctenoid. Colour reddish, lighter below. A rather rare fish.

Polymixia japonica Günther
 “Ginme”
PL. XXIII, fig. 5. × 1⁄2

D. V, 32; A. IV, 16; scales 50. Length of body equal to 3 times that of head, and to 23⁄5 times depth of body; length of head equal to 29⁄7 times diameter of eye, and to 44⁄5 times length of snout. Body oblong, compressed; head rather large, with a rather steep, curved profile; eye very large, projecting beyond the profile; snout short, steep, obtuse; mouth large, sub-inferior, upper jaw the longer; maxillary expanded distally, extending a short distance beyond eye; teeth in jaws villiform, in a narrow, but anteriorly widened band; mandibular barbels long, nearly reaching to base of ventrals. Body light-bluish above, and silvery below; margin of anterior part of dorsal and middle of anterior parts of anal blackish; but the latter a little lighter, caudal blackish at tip of lobes. Occasionally caught in warm waters on Pacific side of Japan; measures about 300 mm. in length.

Ostichthys japonicus (Cuvier & Valenciennes)
 “Yoroidai”
PL. XXIII, fig. 6. × 1⁄2

D. XII, 13; A. IV, 11; P. 17; V. I, 7; scales 28. Length of body equal to 23⁄5 times that of head, and to 21⁄4 times depth of body; length of head equal to 31⁄5 times diameter of eye. Body oblong, rather compressed; head large, snout short; eye large; posterior margin of opercle and pre-opercle sharply serrated, without spine. Scales large, closely imbricated, posterior margin strongly serrated. Body uniformly bright red. It attains to about 300 mm. in length; lives on rather deep rocky bottoms in southern Japan; used as food.



ゴマサバ
 <div>Scomber japonicus Houttuyn</div>
マルサバ

(第二十四圖版 第一圖) × 1/2
D. XI to XII. I, 11; A. I, 1, 11, 5; scales 190.

本邦産鯖には極めて近似の二型知られそれぞれ形態、色彩、習性等に於て異なる點あれども又甚だしく接近して區別し難き材料を屢々見る。故に一種と見なすを穩當とす。基本的ゴマサバは次の體型を有す。體長は頭長の 3 3/5 倍、體高の 4 1/4 倍、頭長は眼徑の 3 3/10 倍、吻長の 3 1/4 倍なり。背部は青綠色にして濃紺の分枝したる斑紋約 30 餘現はれ側線上にて終り其下方に延長する事なし。側線直下より腹部に至りて灰色の斑點無數に散布せる故に胡麻鯖の名あり。又本鯖に比較して稍肥厚せり。本種は關東以西に甚だ多く、朝鮮東海岸、朝鮮海峡に産す。五、六月頃産卵時期にして沿岸近くに來襲し浮游卵を産出す。體長 400 耗、體重 900 瓦に達し本鯖より稍小形なり。

ホンサバ
 <div>Scomber japonicus Houttuyn</div>
マサバ, ヒラサバ
(第二十四圖版 第二圖) × 1/2
D. IX to X, I, 12, 5; A. I, I, 11, 5; scales 220.

體長は頭長の 3 2/5 倍、體高の 4 3/5 倍、頭長は吻長の 3 倍、眼徑の 3 3/5 倍、且體高と殆んど相等し。ゴマサバより稍側扁し大形となる。前者と異なる點は背部の不規則形斑紋は延長して側線下に及び腹部には全く灰色小斑點なき事なり。通常體長 450 耗、體重、1.3 疋に、最大なるものは 600 耗、體重 1.5 疋に達す。腹部銀白色にして黑色の斑點なし。背部濃青色の斑紋は側線下に及べり。本種は樺太より臺灣に至る迄甚だ廣き區域に分布し夏秋の候、東北方面に産す。

カツヲ
 <div>Katsuwonus vagans (Lesson)</div>
(第二十四圖版 第三圖) × 1/2

D. XV, II, 13, 8; A. II, 13, 7.
體長は頭長の 3 1/5 倍、體高の 3 2/5 倍、頭長は眼徑の 6 1/5 倍、吻長の 3 2/7 倍なり。體は肥大せる紡錘形にして兩端は著しく細小となる。側線は明瞭にして胸鰭上にて僅かに彎曲し其後水平に走れり。體色背部は濃青藍色にして側部は銀白色に 4 條或はそれ以上の縦帶を有す。本種は海洋性にして黒潮の影響ある暖海に多く水温 20°—30° C. 比重 1.024—1.026 附近に棲息し、沿岸に接近するは稀にして多くは 100—200 浬の沖合を群をなして廻游す。春季南方の壓群は黒潮に乗つて北上し、夏季北海道東海岸に至る。鰯等の小魚或は中形の浮游甲殻類を

食す。普通體長約 0.8 米、體重 18 疋位なるが時に最大形 25 疋に達す。

マルソウダ
 <div>Auxis thazard (Lacépède)</div>
(第二十四圖版 第四圖) × 1/2
D. IX to X; 11 to 12, 8; A. 13, 7.

體長は體高の 3 1/5 倍、頭長の 4 1/5 倍、頭長は吻長の 4 3/5 倍、眼徑の 6 倍なり。體は稍長き紡錘形にして其横断面は圓く胸甲の中央は延長して後方に延び側線と殆んど一致せり。體色背部は藍青色にして 3 又は 4 條の縦帶あり。腹部銀白色にして眼下に圓形の斑點あり。本邦太平洋沿岸に廣く分布し夏秋の候大群をなして沿岸に襲來し網又は釣にて漁獲せらる。日本海にも棲息せり。體長凡 300 耗。肉は血合肉多く餘り良質ならず。本種に極めて近似の種に Auxis tapeinosoma Bleeker ヒラソウダあり。體は稍側扁し胸甲は尾部に迄延長せず。稍大形となり肉質も幾分良好なるも、漁獲數量に於ては前者より少し。

ヤイト
 <div>Euthynnus yaito Kishinouye</div>
スマ, ワタナベ
(第二十四圖版 第五圖) × 1/2

D. XV to XVI, 12 to 13, 8; A. 13, 7.
體長は頭長の 3 1/2 倍、體高の 3 3/5 倍、頭長は吻長の 3 2/5 倍、體は良く肥滿し胸甲以外に隣なし。口は大きく、上顎後骨は眼の直下に達す。齒は良く發達し鋤骨に齒あり。上顎に 27—30 個、下顎に 24—27 個の齒あり。體色背部は藍黑色にして側部は白く、胸鰭直下に 3 個或は 4 個の黒點あり、本邦南方暖海に多く北方は千葉縣迄にして東北方面には分布せず。通常 600 體重 3 1/2 疋にして、最大形は體長 1 米、體重 10 疋に達す。南海に於て五月頃産卵す。肉は赤味を帶び相當美味なり。

Scomber japonicus Houttuyn
“Gomasaba”
PL. XXIV, fig. 1. × 1/2
“Honsaba” fig. 2. × 1/3

“D. XI to XII. I, 11, 5; A. I, I, 11, 5; scales 190

Among common mackerel we recognize two different varieties, locally known as “Honsaba” and “Gomasaba” respectively. “Gomasaba” has following characteristics. Length of body equal to 3 3/5 times that of head, and 4 1/4 times that of depth of body; length of head equal to 3 3/10 times that of eye, 3 1/4 times that of snout, and nearly equal to the depth. Body fusiform and compressed; bluish-green above in colour; silvery-white with numerous grey spots below. There are bluish wavy bands, about 30 in number, on back, running downwards a little beyond lateral line. Both varieties rather off shore, and their maximum size is 400 mm. in length, and 900 gr. in weight.

“Honsaba” is very closely allied to Gomasaba, differing from the latter in the following points. Back of body bluish-green and with very silvery-white iridescent reflections, but without greyish spots. There are dark-bluish wavy close bands on back, running downwards a little beyond lateral line. This variety haunts more littoral waters than the preceding one, and its range of distribution in Japan is wider, ranging from Saghalien to Formosa. Largest size attained by this fish is a length of about 600 mm. ; maximum weight 1.5 kg.

Katsuwonus vagans (Lesson)
“Katuwo”
PL. XXIV, fig. 3. × 1/2

D. XV, II, 13, 8; A. II, 13, 7.
Length of body equal to 3 1/5 times that of head, 3 2/5 times that of its depth; length of head equal to 6 7/8 times that of eye, 3 2/7 times that of snout. Body plump and handsomely fusiform. Lateral line slightly curved upwards above pectorals and bent downwards below second dorsal, being sub-horizontal in caudal portion. Back dark-bluish violet with some transverse light coloured markings, and sides are silvery with four or more dark coloured longitudinal bands on each side. This fish lives in the clear warm ocean current washing Japanese Coast, and known as “Kuroshiwo,” which has a temperature of from 20° to 30° C. and a specific gravity of from 1.024 to 1.026. In the Japan Sea this fish is caught in small numbers, late in autumn or in winter.

In spring it begins to migrate northwards, and in summer arrives off the south-eastern coast of Hokkaido, sometimes in big shoals of several hundreds to thousands, feeding on small delicate fish, such as sardines and anchovies. Besides those fish, its food consists of medium-sized planktons, such as amphipods, and other crustaceans, such as

squillas, pteropods, heteropods etc. It attains to a length of 0.8 metre, and generally weighs 18 kg. rarely attaining to a weight of 25 kg. Spawning lasts from May to August.

Auxis thazard (Lacépède)
“Maru-sōda”
PL. XXIV, fig. 4. × 1/2

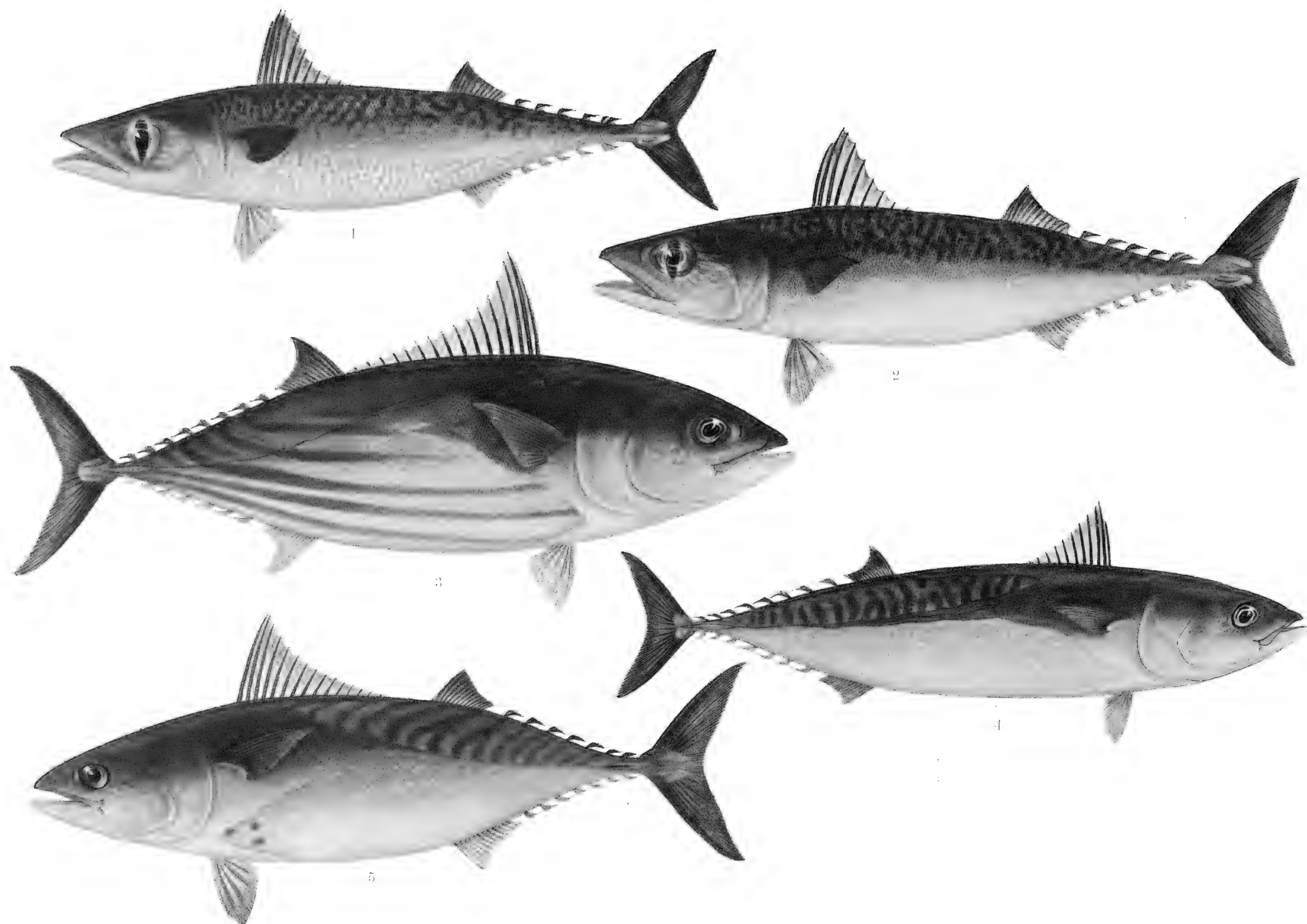
D. IX to X; 11 to 12, 8; A. 13, 7.
Length of body equal to 3 1/5 times that of head, and 4 1/5 times that of its depth; length of head equal to 6 times diameter of eye, and 4 3/5 times that of snout. Body fusiform, and sub-circular in cross-section. Middle line of corselet prolonged backwards to nearly entire length of lateral line. Back dark-greenish, with several oblique bands on the scale-less part above lateral line; belly silvery, with iridescent reflections; an oval dark spot below each eye. Widely distributed in temperate and tropical waters. In warm seasons the fish approach the shore frequently in large schools. It attains on an average 300 mm. in length. Flesh coarse inferior in taste and does not keep fresh means soon decays. There is another species closely allied this one known as *Auxis tapeinosoma* (Bleeker), and locally called “Hirasoda.” Latter species a little more compressed, only a few scales being found along the lateral line on posterior part of body. This species does not occur so abundantly; flesh being firmer is more popularly esteemed.

Euthynnus yaito Kishinouye
“Yaito”
PL. XXIV, fig. 5. × 1/2

D. XV to XVI, 12 to 13, 8; A. 13, 7.
Length of body equal to 3 1/2 times that of head and 3 3/5 times its depth; length of head equal to 3 2/5 times that of snout. Body plump, fusiform, and bare outside corselet. Mouth rather large, maxillary reaching the vertical from the centre of eye. Teeth more developed in size and number than in the other closely allied species. Vomerine teeth present. This characteristic serves to separate this species clearly from allied species in the Atlantic. Upper jaw has 27-30 teeth, lower 24-27. Back bluish-black with many oblique bands; belly silvery with three or more greyish spots below pectorals. Found chiefly on coast of southern Japan.

Northern limit of distribution seems to be off the Chiba Prefecture on the Pacific coast, but the southern limit has not yet been determined. It attains a length of 600 mm. and a weight of 3.5 kg. but fish one metre long and more than 10 kg. in weight are seldom found. Spawning seems to take place May in Formosa.

Flesh is more or less firm and tastes good.





マ グ ロ

Thunnus orientalis (Temminck & Schlegel)

メジ（小形なるもの）、クロシビ（大形なるもの）

（第二十五圖版 第一圖） ×¹/₁₀

D. XIII to XV, 14, 8 to 9; A. 13 to 15, 7 to 8; scales 230.

體長は頭長及體高の3³/₇倍にして頭長は吻長の6倍、眼徑の3倍なり。體は紡錘形にして良く肥満し尾部は著しく細小なり。胸鰭短かく第二背鰭の起點に達せんとす。側線は明瞭にして胸鰭上方にて著しく彎曲せり。眼の大きさは幾分小形にして、體長2米に及ぶ。老成せるものにては、眼徑は頭長の¹/₈なるも、小形なる滿一年魚にありては眼は大きく眼徑は頭長の¹/₆なり。

體色背部は始んど黒色なるも、後方に至るに従ひ次第に光澤ある青藍色を交ふ。腹部灰白色にして、淡色の横帶及び點をなせる縞20餘あり。老成するに至れば不明瞭となる。體重は通常150—200 匁位なるも最大形となりて375 匁に達するものあり。常に海洋の中層を群游し冬季は南方に棲息するも初夏の候より漸次北上し八月には北海道沿岸にて多數に漁獲せらる。秋期は稍沖合深所を南方に移動す。肉は濃赤色にして稍堅く脂肪に富み冬季關東方面に於て殊に賞味さる。

マ グ ロ

Parathunnus sibi (Temminck & Schlegel)

（第二十五圖版 第二圖） ×¹/₈

D. XIV to XV, 13, 9; A. 13. 9; scales 190.

體長は頭長の3¹/₇倍、體高の3³/₇倍なり。頭長は眼徑の6倍、吻長の3倍、體高と殆んど等しきも老成せるものにては頭長短かし。胸鰭長く後方は漸次細小となる。體色背部は藍黑色にして體側、腹面は白し。腹鰭灰色にして先端は黃味を帶ぶ。海洋性にして、魚類、鳥賊類、浮游甲殻類等を食食す。此種は深さ20—120米、水温13°—20° C 前後、他の近似種に比較し稍沖合深層に棲息す。本邦琉球、臺灣に至る迄廣く分布し、北方の限界は北緯36°附近なり。本種は鮪に次ぎて大形となり體長1.5米、體重90 匁に達す。肉は桃色にして軟かく鮪より稍劣れり。

キ ハ タ

Neothunnus macropterus (Temminck & Schlegel)

（第二十五圖版 第三圖） ×¹/₁₀

D. XIII, 14, 9, A. 14 to 15, 8 to 9; scales 270.

體長は頭長の3³/₅倍、體高の3¹/₅倍、頭長は眼徑の7倍、吻長の3倍あり。體は紡錘形にして稍長く頭部小さく體の後方に至り細小となる。鰭は細かし。胸鰭長く第二背鰭の起部を超ふ。第二背鰭及臀鰭は長く殊に「イトシビ」と稱せらるるものは頗る長く尾鰭の起部に迄達し、副鰭と共に濃黃色を呈す。體色背部は藍黑色側部は淡灰色にして黃味を帶び點をなせる横帶と細き帶を分布せり。分布甚だ廣く太平洋沿岸に廣く分布しハワイよりカリフォルニア沿岸に達し南洋方面には多し。北方の限

界はN. lat. 30°附近なり。時に日本海にも漁獲せらる。最大形は體長3米、體重200 匁に達す。肉は赤色にして稍堅く味ひ良好なり。

ビ ン ナ ガ

Germo germo (Lacépède)

トンボシビ、ビンチョウ

（第二十五圖版 第四圖） ×¹/₆

D. XIV, 14, 8; A. 14, 8; scales 210.

體長は體高の3¹/₄倍、體高の3⁷/₁₀倍、頭長は吻長の3倍、眼徑の6¹/₂倍なり。體は稍長く、頭及眼は比較的大なり。胸鰭はサーベル型をなして長く其先端は臀鰭の第一副鰭に迄達せり。體色背部黑藍色にして尾部に至るに従ひ光澤ある綠色を交ゆ。側部及腹部は銀白色なり。此種は小形にして通常體長1米、體重15 匁なるも、最大形として25 匁に達す。

相當廣範圍に分布す。秋期より冬期に至り九州、四國、和歌山方面に於て多數に漁獲さる。夏期は東北沿岸に廻游す。遠海を好み沿岸に接する事少し。日本海には産せず。肉は桃色にして稍軟く味は鮪に劣るも罐詰としては優良なり。多くは延縄にて漁獲さる。

ス ジ ガ ツ ラ

Sarda orientalis (Temminck & Schlegel)

キツネ（東京）、ハガツラ（關西）

（第二十五圖版 第五圖） ×¹/₄

D. XIX, 15, 7 to 8; A. 15, 5 to 6.

體長は頭長の3⁷/₁₀倍、體高の4⁷/₁₀倍、頭長は吻長の3倍、眼徑の7⁷/₁₀倍なり。體は稍長き紡錘形にして、口裂廣く上顎後骨は眼窩の後方に達し、彎曲せる齒を有す。齒は稍側扁し皆同形にして上顎に16個、下顎に10個乃至13個あり。體色背部は黑青色にて側部銀白色、6又は7條の縦線あり。體長約800 耗、體重1.5—3.0 匁あり。肉質は稍軟かく、美味ならず。太平洋沿岸、日本海に産し殊に九州方面に多し。

Thunnus orientalis (Temminck & Schlegel)

“Maguro”

PL. XXV, fig. 1. ×¹/₁₀

D. XIII to XV, 14, 8 to 9; A. 13 to 15, 7 to 8; scales 230.

Length of body equal to 2³/₇ times that of head and that of its height, length of head equal to 3³/₅ times that of snout, and 6³/₅ times of eye. Body plump, caudal portion sharply tapering; pectorals short, scarcely reaching origin of second dorsal, and tapering gradually towards posterior end.

Lateral line has sharp peculiar bend over pectorals. Back of body blackish, shading to greyish-blue with metallic reflections in posterior part; belly greyish, alternately marked with many pale, transverse, and broken lines here plural. Tunnies weighing more than 150 kg. are conidered fairly large, those weighing 375 kg. are rarely found. This is commonest of the species of tunnies occurring in Japanese waters, and is ardently sought after by fishermen. Flesh pinkish in colour, comparatively firm, and not very oily. It holds a high rank in food quality, especially in the colder monthes, and its raw flesh is much esteemed as “Sasimi.”

Parathunnus sibi (Temminck & Schlegel)

“Maguro”

PL. XXV, fig. 2. ×¹/₈

D. XIV to XV, 13, 9; A. 13, 9; scales 190.

Length of body equal to 3¹/₇ times that of head, and 3³/₇ times that of its height; length of head equal to 6 times that of eye, and 3 times that of snout, becoming a little shorter with age.

Pectorals long, gradually pointing towards the distal end. Back blackish tinged with greyish-blue, side silvery, and iris silvery-blue. Ventrals greyish, while the anal white with a yellow tip. A very voracious fish, feeding on small fish, cuttle fish and amphipoda.

The species haunts water at a depth of from 20 to 120 m., at temperatures of from 13° to 25° C., in southern Japan. Distribution of this species in Japan extends from the south to about 36° N. latitude.

Caught on the southern coasts of Japan and also off the Ryukyu Islands, and Formosa. The fish attains a total length of 1.5 metres with a weight of 90 kg. Flesh pink in colour and rather soft, especially that of the young.

Neothunnus macropterus (Temminck & Schlegel)

“Kihada”

PL. XXV, fig. 3. ×¹/₁₀

D. XIII, 14, 9; A. 14 to 15, 8 to 9; scales 270.

Length of body equal to 3³/₅ times that of head, and 3⁴/₅ times that of its height; length of head equal to 7 times that of eye, and 3 times that of snout. Body fusiform and elongated; head small, and caudal portion long. Scales minute.

Pectorals long, extending beyond the origin of second dorsal.

Second dorsal and anal much elongated, the tips of these fins being whitish and reaching to base of caudal. Back of body blackish in colour, sides greyish, alternately marked with oblique transverse full and broken lines of silvery white.

First dorsal greyish tinged with yellow; second dorsal and anal, including finlets of both fins, bright yellow.

Widely distributed, being found in the Indian and Pacific Ocean. Northern limit of distribution is ca. 35° N. latitude, but this fish is sometimes found in the Japan Sea and off Hokkaido. Found also in Hawaiian waters and on South California Coast. Largest specimens measure more than 3 m. in length, and ca. 200 kg, in weight. Flesh delicately pink, firm, and tastes excellent.

Germo germo (Lacépède)

“Binnaga”

PL. XXV, fig. 4. ×¹/₆

D. XIV, 14, 8; A. 14, 8; scales 210.

Length of body equal to 3¹/₄ times that of head, and 3⁷/₁₀ times that of its height; length of head equal to 3 times that of snout, and 6¹/₂ times of eye. Body rather slender, head and eye comparatively large. Pectorals very long, reaching as far as first anal finlet. Body blackish-blue in dorsal part, with a greenish lustre near tail, sides and belly being silvery.

This species is rather small in size, and single specimen weighing 25 kg. is rather rare. Very widely distributed in the Pacific Ocean; caught in the United States of America, and in large quantities on the Pacific Coast of Hondo, main island of Japan, but there is no record of this fish being caught in the Japan Sea. Flesh soft and delicate pink in colour, and not much esteemed as food in Japan, but the canned flesh is pretty widely consumed as “Tuna” in the United States of America.

Sarda orientalis (Temminck & Schlegel)

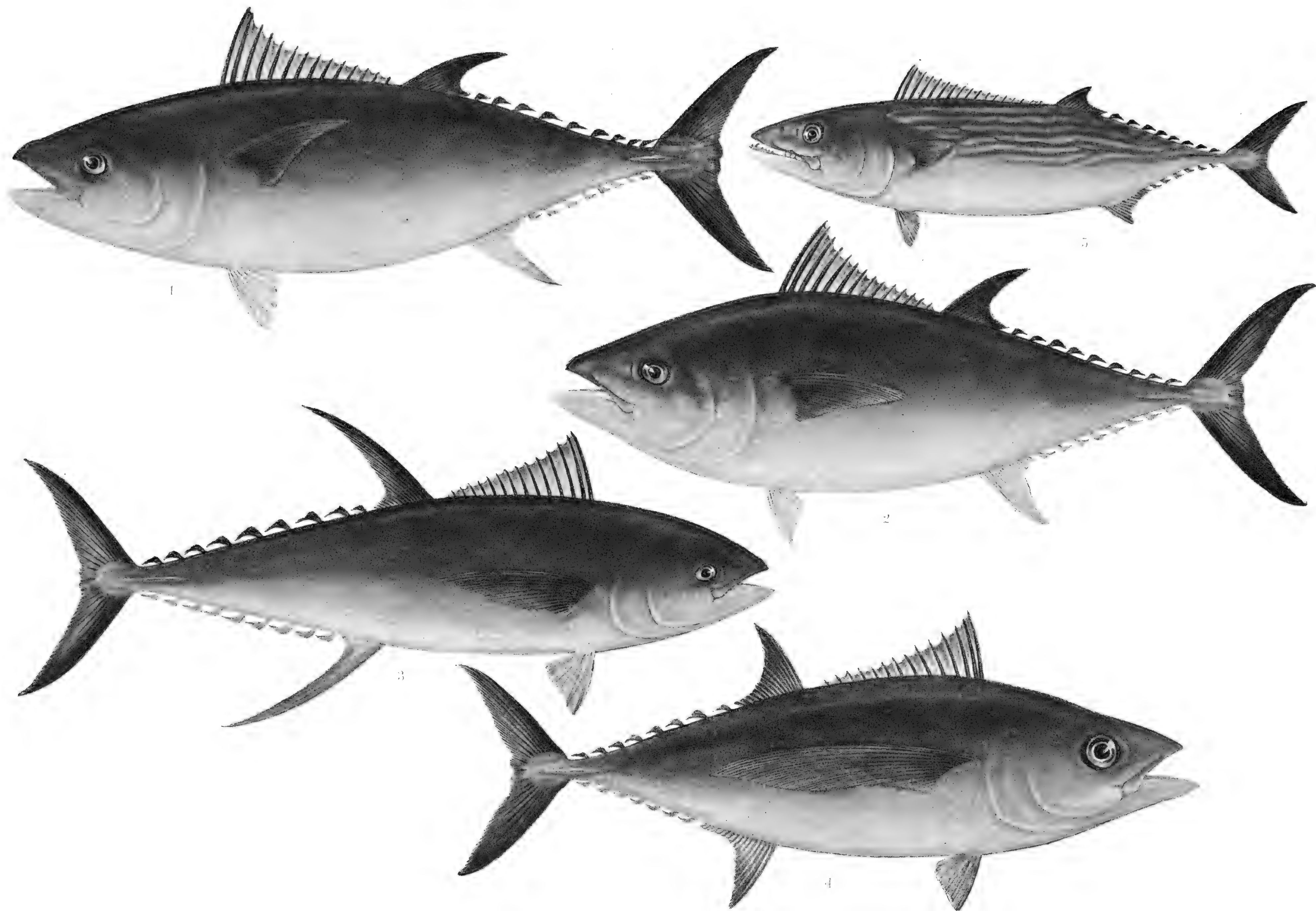
“Sujigatuwo”

PL. XXV, fig. 5. ×¹/₄

D. XIX, 15, 7 to 8; A. 15, 5 to 6.

Length of body equal to 3⁷/₁₀ times that of head, and 4⁷/₁₀ times that of its height; length of head equal to 3 times that of snout, 7⁷/₁₀ times that of eye. Body elongated and fusiform in adult, but a little shorter and compressed in young. Mouth wide, maxillary with large curved and compressed teeth, reaching beyond orbit. Teeth in jaws more or less unequal in size; about 16 teeth in upper jaw, and 10 to 13 in lower.

Back dark-bluish, and sides silvery with 6 to 7 longitudinal bands on each side. Grows to a length of about 800 mm. and to a weight of 1.5 kg. Flesh rather soft, and inferior in quality. Found in southern parts of Japanese waters, both in the Pacific as well as in the Japan Sea, being especially abundant in Kyusyu.



マカジキ
 <div>Tetrapturus mitsukurii Jordan & Snyder</div>
 <div>（第二十六圖版 第一圖）×⁠1/10⁠</div>
D. XXXVII, 6; A. 11, 6.

體長は頭長の2⁠3/4⁠倍、體高の6⁠1/2⁠倍なり。體は延長、側扁し不完全なる埋没せる鱗を以て覆はる。吻は縁邊圓く、尾隆起は2對、兩顎及び口蓋には小齒あり、腹鰭に各棘あり。背鰭は成長せるものにては分離し、其高さは體高より遙に高し。大洋魚にして太平洋岸に廣く分布す。

メカジキ
 <div>Xiphias gladius Linné</div>
 <div>（第二十六圖版 第二圖）×⁠1/10⁠</div>
D. XL, 4; A. 18, 4.

體長は頭長の2⁠1/4⁠倍、體高の⁠5/6⁠倍なり。體は延長し裸なれ共幼少なるものは粗き粒狀面をなす。上顎は非常に長く突出し「カジキトホン」を形成す。第一背鰭は鰐孔と相對して起り鎌狀をなし、其の高さは體高より短し。第二背鰭は非常に小さく第二小臀鰭と相對す。成長せるものは齒を缺くも幼少なる時は之を存す。兩背鰭は結合して上昇す。體は裸にして多少粗なり。殊に幼少なるものは不完全なる鱗を有す。尾隆起は1對なり。體色上部は金屬的の暗紫色、下部は淡黒色を呈し、長吻の上部は黒色、下部は淡し。此種は太平洋、太西洋に分布し體長約2米、體重140-180 斤に達す。新鮮なる肉は淡紅色を呈し、美味にして重要な食用魚なり。

クロカワ
 <div>Tetrapturus mazara Jordan & Snyder</div>
 <div>（第二十六圖版 第三圖）×⁠1/10⁠</div>
D. XL, 7; A. 12, 6.

體長は頭長の2⁠5/6⁠倍、體高の6倍なり。體は延長、側扁し、吻は相當長し、棘狀背鰭は餘り鎌狀をなさず。背部は暗綠色にして多くの白き縦線あり。兩背鰭は黃色にて青色の斑點あり。我國に普通にして、體長4米に達す。

バセウカジキ
 <div>Istiophorus orientalis (Temminck & Schlegel)</div>
 <div>（第二十六圖版 第四圖）×⁠1/10⁠</div>
D. XLIV, 7; A. 10, 7.

體長は頭長の2⁠1/5⁠倍、體高の7⁠2/3⁠倍なり。體は細く、側扁し、長鱗を以て覆はれ、兩顎及び口蓋には無數の細齒を有す。腹鰭ありて2又は3刺を有す。背鰭は非常に高く、連続し、刺多し。第一背鰭の高さは體高より長く、臀鰭は分離す。吻は通常メカジキよりも短く扁平にして縁邊圓く、下顎前者よりも發達す。體色背部は暗綠色にして體側には多くの白點あり。腹部は蒼灰色なり。

サワラ
 <div>Scomberomorus niphonium (Cuvier & Valenciennes)</div>
 <div>（第二十六圖版 第五圖）×⁠1/6⁠</div>
D. XIX, 15, 9; A. II, 15, 8.

體長は頭長の4⁠2/3⁠倍、體高の5⁠1/8⁠倍なり。頭長は吻長の2⁠2/6⁠倍、眼徑の6⁠1/6⁠倍なり。體は細長く側扁し、小鱗を以て覆はる。側線は波狀をなし第二背鰭の下にて曲り、側線の兩側には多數の小枝溝存在す。兩顎齒は槍鋒狀にして鋭く上顎に約25齒、下顎に約20齒を有す。鋤骨及口蓋骨には絨毛狀齒あれども舌には存せず。體は金屬光澤を帶び、背部は灰綠色にして青色の波狀を有し、腹部は銀色なり。體の兩側には7條又は夫れ以上の灰色點の縦列を有す。體長1米、體重5斤に達し、重要な食用魚にして終年漁獲せらるるも春季殊に多し。産卵期は四、五月の候なり。鰻を缺けども垂直的の分布は比較的廣く溫暖季には表面近くを游泳し冬季には深層に下る。地理的には我國沿岸に廣く分布し北支那沿岸にも分布す。殊に内海に多し。

Tetrapturus mitsukurii Jordan & Snyder
“ Makaziki ”
PL. XXVI, fig. 1. × ⁠1/10⁠

D. XXXVII, 6; A. 11, 6.
Length of body equal to 2⁠3/4⁠ times that of head, and to 6⁠1/2⁠ times depth of body. Body is elongated and compressed, covered with rudimentary embedded scales. “ Sword ” rounded on the edge; caudal keel double; small teeth in jaws and on palatines; ventral fins represented each by a single spine. Dorsal fins separated in the adult, part of the middle rays being aborted, not greatly elevated, their height not greater than depth of body.

Xiphias gladius Linné
“ Mekaziki ”
PL. XXVI, fig. 2. × ⁠1/10⁠

D. XL, 4; A. 18, 4.
Length of body equal to 2⁠1/4⁠ times that of head, and to 5⁠1/6⁠ times depth of body. Body elongated, scaleless, in young covered with rough granulations. Upper jaw very much prolonged, forming a “ sword,” which is flattened horizontally and composed of the consolidated vomer, ethmoid, and pre-maxillary. First dorsal fin begins opposite to the gill-openings, falcate and elevated, its height rather less than that of body; second dorsal fin very small, is on the tail, opposite to the small second anal. Teeth are wanting in the adult, but present in the young, and 2 dorsal fins are connected, the fins being elevated as in the species *Istiophorus*. Skin is scaleless, more or less rough, especially in the young, which have rudimentary scales. Caudal keel is single.

Colour of body dark metallic-purplish above, a dusky colour below. “ Sword ” almost black above, below lighter. This fish occurs both in the Atlantic and Pacific Oceans, attaining to a length of about 2 m. and a weight of from 140 to 180 kg. The flesh is pinkish and, being rich in flavour, fairly valued as food.

Tetrapturus mazara Jordan & Snyder
“ Kurokawa ”
PL. XXVI, fig. 3. × ⁠1/10⁠

D. XL, 7; A. 12, 6.
Length of body equal to 2⁠5/6⁠ times that of head, and to 6 times depth of body. Bedy elongated, compressed, with moderately long “ sword.” Back high, the profile rapidly rising to dorsal fin. Spinous dorsal not abruptly falcate. Back dark-blue with numerous whitish transverse bars; both dorsal fins violet, with bright blue spots. This species is fairly common in this country, attaining to a length of 4 m.

Istiophorus orientalis (Temminck & Schlegel)
“ Basyôkaziki ”
P.L. XXVI, fig. 4. × ⁠1/10⁠

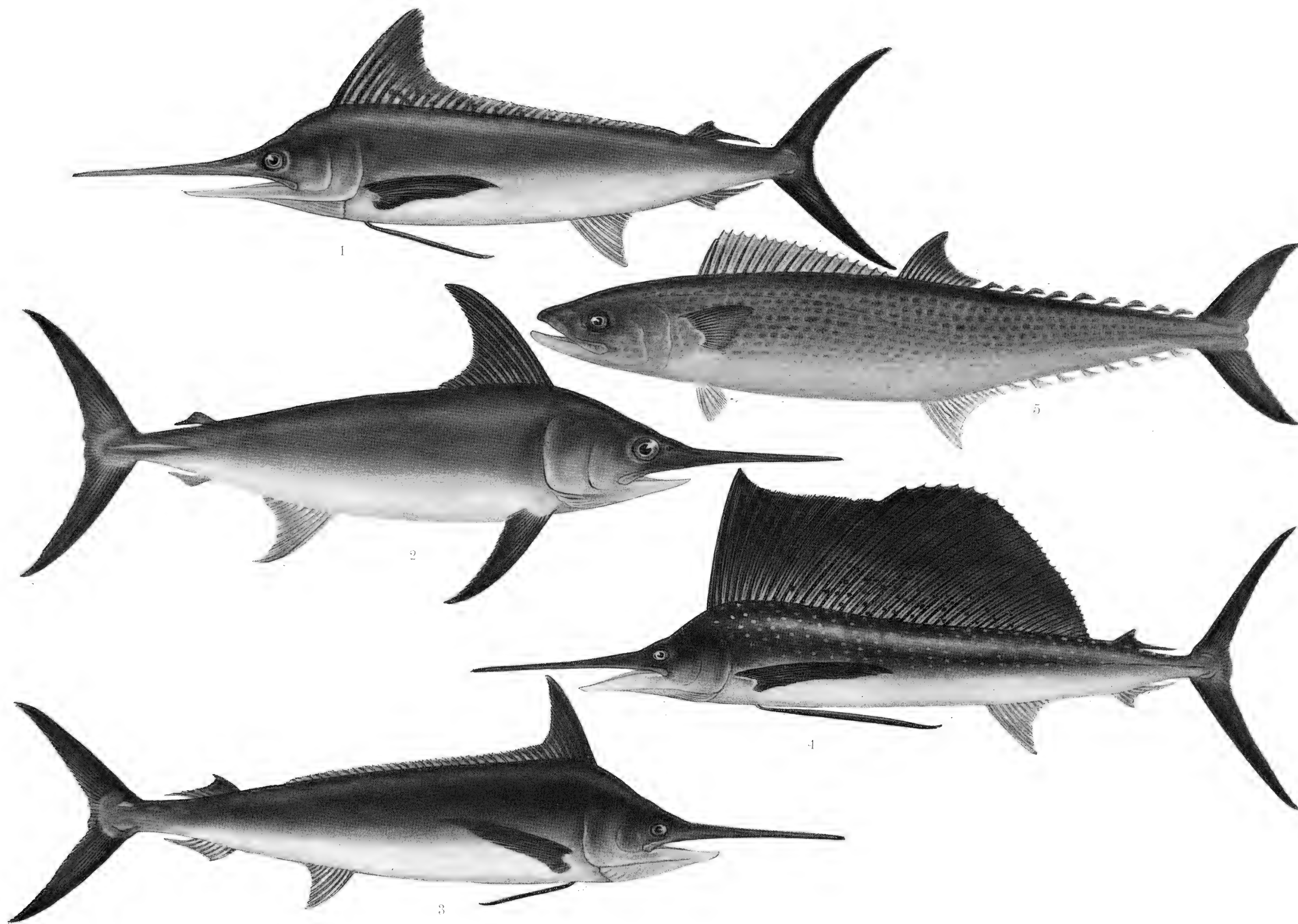
D. XLIV, 7; A. 10, 7.
Length of body equal to 2⁠1/5⁠ times that of head, and to 7⁠2/6⁠ times depth of body. Body slender, compressed, covered with elongated scales. Numerous small teeth on jaws and palatines. Ventral fin present, with 2 or 3 rays; dorsal fin extremely high, continuous, as in young of *Tetrapturus* and *Xiphias*; rays very numerous, none being aborted; height of first dorsal fin much greater than depth of body; anal fin divided. “ Sword ” usually shorter and less flattened than in *Xiphias*, the edge more rounded, the lower jaw more developed.
Body is dusky-bluish on back, and sides have numerous white spots; belly pale-greyish.

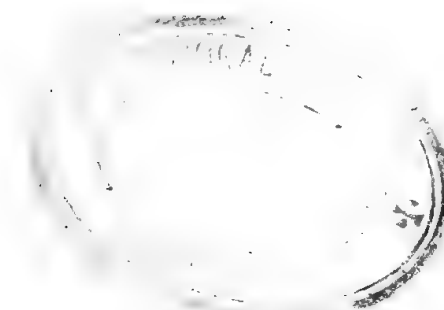
Scomberomorus niphonium (Cuvier & Valenciennes)
“ Sawara ”
PL. XXVI, fig. 5. × ⁠1/6⁠

D. XIX, 15, 9; A. II, 15, 8.
Length of body equal to 4⁠2/3⁠ times that of head, and to 5⁠1/6⁠ times depth of body; length of head equal to 2⁠3/6⁠ times that of snout, and to 6⁠1/6⁠ times diameter of eye. Body slender, elongated, and compressed, covered with minute scales. Lateral line undulating, with a marked curve below second dorsal. Many small branch-canals are found on both sides of lateral line. Teeth in jaws lanceolate, curved, and trenchant, about 25 in the upper jaw and about 20 in the lower. Villous teeth on vomer and palatines, but none on tongue.

Whole body shines with a metallic lustre. Back is light greyish-blue washed with green, and belly silvery. In a living fish a purplish shade is noticeable. Seven or more longitudinal rows of greyish spots are found on each side of body.

This fish grows to a length of about 1 metre, and 5 kg. in weight. Valuable food-fish, caught all the year round, and especially abundant in Spring. Spawning season is from April to May. Though wanting in the air-bladder, this species has a rather wide range of vertical distribution, swimming near the surface of water in warm seasons, and descending to greater depths in cold seasons. Geographically, this species is widely, and abundantly distributed in coastal waters of this country, also in waters of northern China; it occurs especially abundantly in the Inland Sea of Japan.





マンダヒ
Lampris regia (Bonnaterre)

(第二十七圖版 第一圖) × ¹ / ₁₀
D. 53 to 55; A. 38 to 41; V. 14 to 16.

體長は頭長の2¹/₉倍、體高の1¹/₃倍なり。體は長圓形にして側扁し、小なる剝離性の鱗を有す。眼及び口は寧ろ小に、背鰭は體の稍中間部に生ず。體色上部は赤褐色、側面及び下部は銀色にして、頭部及體に白斑點多く存し、鰭は紅色なり。體長約1米、體重25疋に達す。海洋性魚にして熱帶、亞熱帶の海洋に廣く分布し、味稍佳なり。

ヒラサハラ
Cybium koreanum Kishinouye

(第二十七圖版 第二圖) × ¹ / ₆
D. XIV, 19 to 21, 9; A. 18 to 21, 7.

體長は頭長の4倍、體高の3倍にして、頭長は吻長の3倍なり。體幅廣く、吻は短く尖り、胸甲、側線及鰭底部周圍に小鱗をれ共主として皮下に埋る。故に體は一見裸の如く見ゆ。兩顎齒は鋭く長くして、上顎に16—19個、下顎に12—15個あり。絨毛齒は鋤骨、口蓋、舌、等に有り。腹鰭は甚だ小なれ共第二背鰭、臀鰭、及尾鰭はよく發達す。

體は總て金屬光澤に輝き背部は灰綠色、腹部は銀色なり。側線に沿ひて3條又は以上の小灰色點の縦線走る。此の種は七月頃朝鮮西岸に於て産卵をなす。體長1.5米、體重約15疋に達し、夏秋の候流網等にて漁獲せらる。新鮮なるものは白色を帶び、甚だ美味なり。

ヨコジマガハラ
Cybium commerson (Lacépède)

(第二十七圖版 第三圖) × ¹ / ₆
D. XVII, 15, 9; A. XIX, 9; scales 59.

體長は頭長の3³/₄倍、體高の4¹/₄倍にして頭長は吻長の2¹/₂倍なり。體は延長し稍紡錘形にして細鱗を以て覆はる。側線は波状をなし、第二背鰭後方にて彎曲す。兩顎齒は短く三角形にして、甚だ側扁し、細小なる顎齒狀をなす。即上顎に約30個、下顎に約20個あり。鋤骨及口蓋骨にも粒狀齒を有す。

體色上部は灰綠色、腹部銀色にして體側に約50條の横帶あり。此の種は冬期及春期臺灣の西岸に多獲せられ、又九州より印度洋にわたり廣く分布す。體長1.5米に達し新鮮なる肉は脂肪に富み堅く、甚だ美味なり。

カマスサハラ
Acanthocybium solandri (Cuvier & Valenciennes)

(第二十七圖版 第四圖) × ¹ / ₁₀
D. XXVI, 11, 9; A. 11, 9.

體長は頭長の2¹/₆倍、體高の6¹/₆倍にして體長は頭長の2倍なり。體は非常に延長し側扁す。全身突起を有する小鱗を以て覆はる。第一背鰭よく發達すれ共第二背鰭及び臀鰭は甚だ小なり。側線は第一背鰭の中間部の下にて急曲し、側線の兩側より數多の垂直分枝を生ず。兩顎には約50—55個の三角齒を有し、後方に於て漸次其數を増加す。鋤骨及口蓋骨には絨毛齒を生ず。

體色上部は青味を帶びたる鐵色にして約30條の黑色の横帶あり。此の種は主として日本の熱帶及亞熱帶部の溫暖なる海に見られ太平洋性貪食魚にして、群游せず。體長1.5米。體重約17疋に達す。

アゴナシ
Polydactylus agonashi Jordan & McGregor

(第二十七圖版 第五圖) × ¹ / ₂
D. VIII, I. 13; A. III, 12; scales 63.

體長は頭長及體高の3¹/₂倍なり。體稍長く、側扁し、吻は鈍く口上 突出す。第一背鰭は前方にありて、其の邊緣は僅に鋸狀をなし、第二背鰭及び臀鰭は互に相對す。兩顎、鋤骨、口蓋、及翼狀骨には絨毛狀齒を生じ、前鰓蓋骨は其の後縁に於て鋭き鋸齒狀をなす。尾鰭は深く叉狀をなし、胸鰭條數5なり。鱗は寧ろ小にして、櫛狀なり。體色青味を帶びたる銀色にして第一背鰭及び胸鰭には暗褐色の斑紋あり。

タチノウラ
Trichiurus japonicus (Temminck & Schlegel)

(第二十七圖版 第六圖) × ¹ / ₆
D. 139.

體長は體高の16倍、吻長は眼徑の2¹/₃倍なり。體は甚だしく延長し帶狀にして、尾は甚だ弱く漸次に細く、尾鰭を缺く。頭は長く尖り、口は非常に大に、下顎突出し、上顎には4個の長く強き鎌狀の齒を有し、口蓋にも齒を有す。背鰭は單一にして低く背部の全體にわたり、棘は軟棘と明に區別するを得ず。臀鰭甚だ長く、其の基底は體長の半を越ゆ。背鰭邊緣は黑色なり。

暖海に棲息し我國の中部より南部の沿海にて漁獲せらる。貪食にして、體長1.5米に達し、味ひ佳良なり。

Lampris regia (Bonnaterre)
“Mandai ”
PL. XXVII, fig. 1. × ¹ / ₁₀

D. 53 to 55; A. 38 to 41; V. 14 to 16. Length of body equal to 2¹/₉ times that of head, and to 1¹/₃ times depth of body. Body very oblong, compressed, with small deciduous scales. Eye and mouth rather small. Dorsal fin inserted at nearly middle part of body. Colour of body reddish-brown above, silvery on sides and below, with many reddish spots on head and body; fins all bright red. The fish measures about 1 metre in length, 25 kg. in weight. Oceanic fish, widely distributed in tropical and sub-tropical seas, the flesh being rather good to taste.

Cybium koreanum Kishinouye
“Hira-zawara ”
PL. XXVII, fig. 2. × ¹ / ₆

D. XIV, 19 to 21, 9; A. 18 to 21, 7. Length of body equal to 4 times that of head, and to 3²/₃ times depth of body; length of head equal to 3 times that of snout. Body very deep, snout short and pointed; small scales are found in the corselet, lateral line, and round the base of the fins; but they are chiefly concealed under the spine, so that the body seems to be entirely scaleless. Teeth in jaws sharp, elongated, 16—19 in the upper, and 13—15 in the lower; villiform teeth on the vomer, palatines, and tongue. Anterior half of lateral line has many branches. Ventrals very small, but second dorsal, anal, and caudal well developed. The whole body has a brilliantly metallic lustre, back being greyish-blue, and belly silvery. There are three or more longitudinal rows of small grey spots along lateral median line. This fish spawns on the west coast of Korea in July, grows to a length of more than 1¹/₂ metres, and about 15 kg. in weight. Caught in Summer and Autumn with drift-nets or in pond-nets, the flesh is whitish, very delicate, and delicious in taste.

Cybium commerson (Lacépède)
“Yokozima-zawara ”
PL. XXVII, fig. 3. × ¹ / ₆

D. XVII, 15, 9; A. XIX, 9; scales 250. Length of body equal to 3³/₄ times that of head, and to 4³/₄ times depth of body; length of head equal to 2¹/₂ times that of snout. Body very elongated, rather fusiform, highest near middle part, and nearly rounded in cross section. Minute scales are found all over body. Lateral line undulating, making a marked curve behind second dorsal. Teeth in jaws short, triangular, much compressed, and very minutely serrated; there are about 30 of them in upper jaw, and 20 in lower; minute, granular teeth on vomer and palatines. Colour of body greyish-blue above, belly silvery; about 50 transverse black bands on sides. This species is abundant on west coast of Formosa in Winter and Spring, and widely distributed from Kyusyu to the Indian Ocean. The fish grows to 1¹/₂ metres in length; the flesh is fatty but firm, and superior in taste.

Acanthocybium solandri (Cuvier & Valencienne
“Kamasu-sawara ”
PL. XXVII, fig. 4. × ¹ / ₁₀

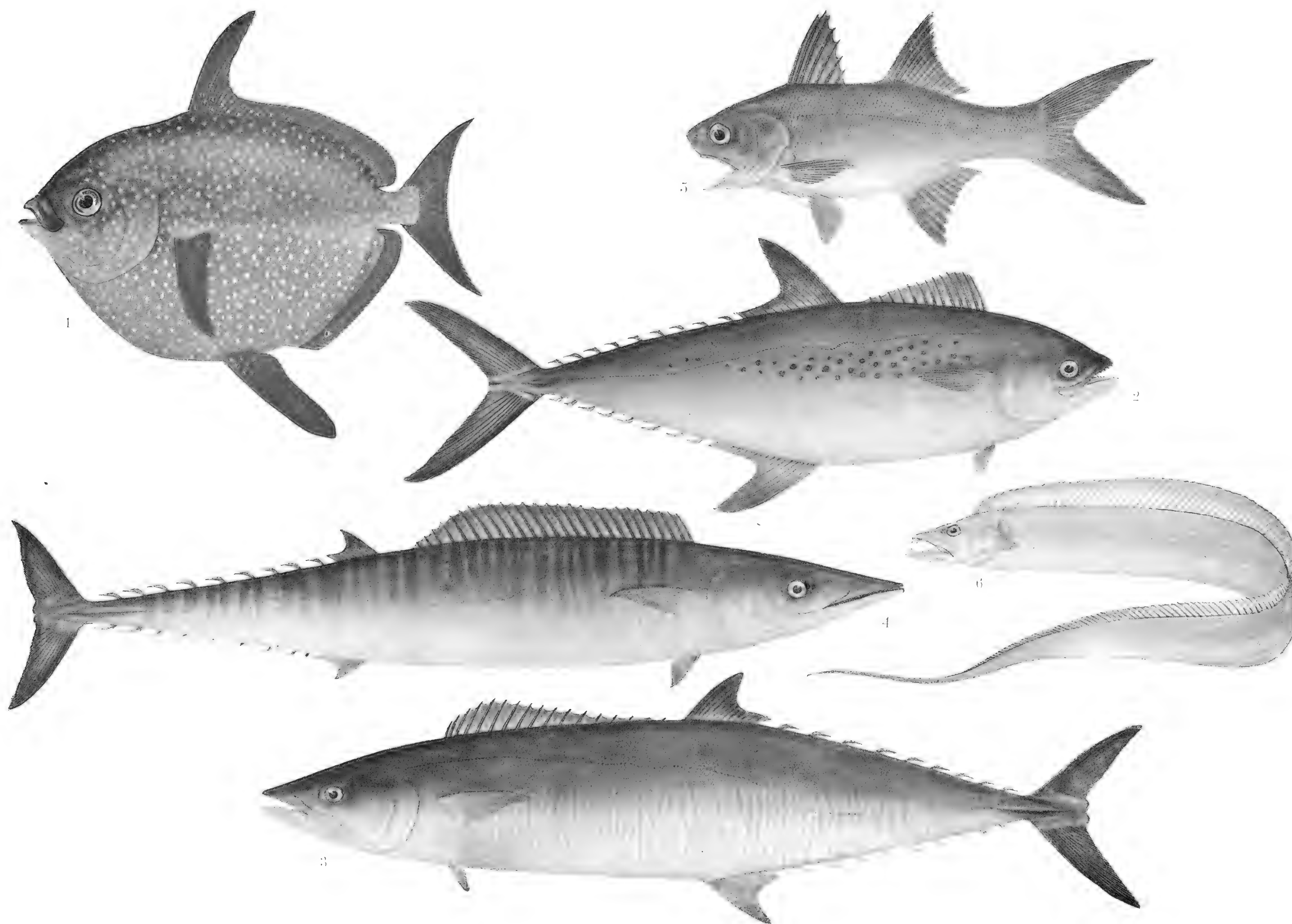
D. XXVI, 11, 9; A. 11, 9. Length of body equal to 2¹/₉ times that of head, and to 6¹/₆ times depth of body; length of head equal to twice that of snout. Body much elongated and compressed, covered with thin small lanceolate scales. First dorsal well developed, but second dorsal and anal very small. Lateral line sharply and strongly curved under middle of first dorsal. Many vertical branches extend from both sides of lateral line. In each jaw about 50 to 55 triangular teeth present, which gradually increase in size posteriorly. Vomer and palatines with villous teeth. Colour of body steel-blue above, with about thirty dark transverse bands, which are distinct in young. This species is found chiefly in the clear warm water of the tropical and sub-tropical seas of Japan; pelagic voracious fish, does not appear in shoals; it attains to a length of 1¹/₂ metres, and a weight of about 17 kg.

Polydactylus agonashi Jordan & McGregor
“Agonasi ”
PL. XXVII, fig. 5. × ¹ / ₂

D. VIII, I, 13; A. III, 12; scales 68. Length of body equal to 3¹/₂ times that of head, or depth of body. Body rather elongated, compressed, with a triangular elevated profile. Snout blunt, overhanging mouth; first dorsal anterior with slightly falcate free margin; second dorsal and anal opposite to each other. Teeth in villiform bands in both jaws and on vomer, palatines, and pterygoids; pre-opercle sharply serrated on posterior margin, its angle with a scaly flap; caudal deeply forked; pectoral filaments number 5. Scales rather small, finely ctenoid. Body colour pale-silvery, first dorsal and pectoral speckled dark-brown. Insignificant as a food fish in this country.

Trichiurus japonicus (Temminck & Schlegel)
“Tatino-uwu ”
PL. XXVII, fig. 6. × ¹ / ₆

D. 139. Length of body equal to 16 times depth of body, length of snout equal to 2¹/₃ times diameter of eye. Body extremely elongated, band-like, tail very slender, tapering to a fine point, without caudal fin. Head long and pointed, with very wide mouth; lower jaw projecting, upper jaw with 4 long, strongly compressed barbed teeth; teeth on palatines. Dorsal fin single, low, occupying whole of back, its spines not distinguishable from soft rays; anal very long, its base more than half length of body; pectorals small, ventrals wanting. Uniformly bright-silvery, dorsal dark edged. Occurs in warm seas, from middle part of Japan southwards. Voracious fish, attaining to about 1¹/₂ metres in length. Its whitish flesh is delicious to taste.



イトヒキアシ

Alectis ciliaris (Bloch)

(第二十八圖版 第一圖) ×1
D. V, I, 19; A. II, I, 16; scutes 12.
體長は頭長の3倍にして、體高と殆んど等し。背外廓は背鰭より前方に直線的に下降し後頭部に於て僅に彎曲せり。腹部外廓は腹鰭起部より臀鰭基部に至る間直線的に下降し、全部に方形を呈する故クアジと稱する事あり。吻短かく、主上顎骨は眼の前縁より延長せり。側線は強く彎曲し稜鱗は少し。背鰭の前方7軟條及臀鰭前方5軟條は甚だしく延長し、長きものは體長の2倍以上あり。故にイトヒキとも稱せらる。臀鰭は背鰭より稍短かし。體は背面蒼青色にして1個の濃青色の横帶あり。鰓蓋に淡灰色の斑點あり。本種は本邦太平洋沿岸に廣く分布し印度洋に迄及べり。されど漁獲さるる事少し。

オキアジ

Caranx helvolus (Forster)

(第二十八圖版 第二圖) × ² / ₃
D. VII to VIII, I, 27 to 28; A. I, I, 21 to 22; scutes 37.

體長は頭長の3¹/₂倍、體高の2¹/₄倍あり。背外廓は強く一樣に彎曲せり。吻は短かく、主上顎骨は眼の前縁より延長せり。下顎は上顎より突出す。兩顎の齒は稍長く1列に並び、側線は僅に彎曲せり。體は黒褐色にして銀白の光澤を有す。太平洋暖海に廣く分布し、九州、朝鮮に多く、肉は相當美味なり。體長300耗に達す。

マルアジ

Decapterus maruadi (Temminck & Schlegel)

(第二十八圖版 第三圖) ×1

D. VIII, I, 32 to 33, I; A. II, I, 28 to 29, I; scutes 35 to 36.
體長は頭長の4倍、體高の4倍あり。體は細長く、僅に側扁す。吻は眼徑より長し。主上顎骨は漸く眼窩の前縁に達す。顎の齒は1列にして、上顎前縁に鋤骨齒あり。口蓋骨及舌上にも齒を有す。側線は前方彎曲し、其彎曲せる部分は其直線部より長し。胸鰭は頭長と殆んど等し。體色は背面蒼青にして、腹面銀白色、鰭は僅に黄色を帶ぶ。房州にては青鰐と呼ぶ事あり。他種と區別し得べき本種の特徴は、長き胸鰭及び高き骨質鱗を有する事、背軟鰭の先端白色をなす事等なり。本邦太平洋沿岸、關東以南に多く、體長250耗に達す。廣く食用に供す。

メアジ

Selar mauritianus (Quoy & Gaimard)

(第二十八圖版 第四圖) ×1

D. VIII, I, 26; A. II, 23; scutes 36.
體長は頭長の3 ¹ / ₄ 倍、體高の3 ¹ / ₂ 倍あり。頭長は眼徑の3 ¹ / ₂ 倍あり。體は側扁し、眼徑は吻長より短かし。下顎稍突出す。主上顎骨は瞳孔前縁に達す。上顎齒は甚だ狭き帶狀をなし、下顎も1列あり。側線僅かに彎曲し、第12背軟條下より直線となれり。側線の骨質部は骨質鱗にして前方には棘なし。體色は背部濃青色にして、腹面銀白色、鰓蓋骨縁に黒點あり。本邦太平洋沿岸に廣く分布し食用に供され、體長200耗に達す。

ブリ

Seriola quinqueradiata Temminck & Schlegel

(第二十八圖版 第五圖) × ¹ / ₅

D. VI, I, 30 to 34; A. II I, 17 to 20; scales 200.
體長は頭長の3 ² / ₅ 倍、體高の3 ⁹ / ₁₀ 倍に等し。體は稍側扁し、頭部背外廓は殆んど直線的なり。吻は稍尖り、圓錐形にして。眼徑より遙に長く其三倍あり。主上顎骨は眼窩の前縁に達す。(幼時は眼の中央に至る)。本種他種と區別し得べき特徴は、頭部背外廓が直線的なる事、吻は長く稍尖れる事、眼の小さき事、主上顎骨後縁上方は鋭き角をなす事、鰓耙は眼徑よりも長き事、尾柄は細き事、胸鰭は腹鰭より長き事等なり。體色蒼青にして、腹部白く體の中央に黄色の縦帶あり。體長700—900耗、體重8—10疋あり。太平洋及日本海方面に廣く分布し、關東以西にては、秋冬の候定置漁具等にて漁獲され、東北方面は春及秋に日本海方面は春季に多く漁獲さる。食用魚として廣く用ゐられ經濟的に重要なり。

カンパチ

Seriola purpurascens Temminck & Schlegel

(第二十八圖版 第六圖) × ¹ / ₄

D. VII, I, 32 to 33; A. II, I, 19 to 22; scales 150,
體長は頭長の3 ³ / ₁₀ 倍、體高の3倍あり。頭長は眼徑の5 ¹ / ₁₀ 倍、吻長の2 ² / ₃ 倍あり。體は前者より側扁す。主上顎骨は眼の中央に達し、其後縁は廣く、凹形を呈す。臀鰭は胸鰭基底の下方より起り、胸鰭より長し。體色は紫褐色に青味を帶び、腹部白し。體の中央を通り、眼及尾柄を過ぎる1黄縦帶あり。各鰭は黒く黄色を帶ぶ。臀鰭邊緣は白し。前者と同様廣く分布し食用に供するも、其數量稍少く、味ひ前者に劣る。

Alectis ciliaris (Bloch)

“ Itohiki-adi ”
PL. XXVIII, fig. 1. ×1
D. V, I, 19; A. II, I, 16; scutes 12.

Length of body equal to 3 times that of head, and nearly equal to depth of body. Dorsal profile descending rapidly in a straight line from origin of soft dorsal to nape, with a slight curvature at occiput; ventral profile gradually ascending straight from origin of anal to base of ventral, thence rapidly to tip of mandible with a slight concavity. Snout very obtuse, maxillary extending beyond front border of eye. Lateral line strongly arched, becoming straight below eleventh soft dorsal ray. Scutes few in number, weakly armed, distinct only on posterior half of straight portion of lateral line. Anterior seven rays of soft dorsal, and five of anal excessively lengthy, their first rays being much longer than twice the length of the body. Ventral very long, half the length of body. Colour of body bright-blue above, crossed with six bluish bands; a light greyish spot on opercle; ventral silvery. This species is widely distributed in the tropical part of Indian and Pacific Oceans, but is not so common in Japan.

Caranx helvolus (Forster)

“ Okiadi ”
PL. XVIII, fig. 2. × ² / ₃
D. VII to VIII, I, 27 to 28; A. I, I, 21 to 22; scutes 37.

Length of body equal to 3¹/₂ times that of head, and to 2¹/₂ times depth of body. Profile strongly and almost equally curved. Snout obtuse, longer than eye, maxillary extending to front border of eye, lower jaw longer than upper. Teeth in each jaw rather strong, arranged in a single row. Lateral line slightly curved. Colour of body dark-brown, with a somewhat silvery lustre. This species is widely distributed throughout the warmer parts of the Pacific, occurring on southern coast of Japan; measures about 300 mm. in length.

Decapterus maruadsi (Temminck & Schlegel)

“ Maruadi ”
PL. XXVIII, fig. 3. ×1
D. VIII, I, 32 to 33, I; A. II, I, 28 to 29, I; scutes 35 to 36.

Length of body equal to 4 times that of head, and to 4¹/₃ times depth of body. Body elongated, slender, a little compressed. Snout much longer than diameter of eye, maxillaries scarcely reaching front border of eye. Teeth in jaws in a single row, vomerine teeth in a transverse strip at anterior end; palatines toothed; a band of teeth in the middle of tongue. Lateral line somewhat strongly arched, its curved portion longer than the straight. Pectorals as long as head; colour of the body greenish above, silvery below, fins faintly tinged with yellow. This species can easily be distinguished from all other Japanese species of *Decapterus* by having longer pectorals, higher scutes, and soft dorsal with a white top. It is common off the southern coasts of Japan; measures about 250 mm. in length; delicious to taste, and much used as food.

Selar mauritianus (Quoy & Gaimard)

“ Meadi ”
PL. XXVIII, fig. 4. ×1
D. VIII, I, 26; A. II, I, 23; scutes 36.

Length of body equal to 3¹/₄ times that of head,

and to 3¹/₂ times depth of body, length of head equal to 3¹/₂ times diameter of the eye. Body much compressed,.eye rather shorter than snout. Lower jaw rather longer than upper; maxillaries extending to front border of pupil. Teeth of upper jaw in an exceedingly narrow band; those in lower jaw in a single row. Lateral line slightly curved, becoming straight below twelfth soft dorsal ray. Scutes present along whole length of straight portion of lateral line, a few anterior ones not bearing a spine. Colour of body deep-bluish above, belly silvery, and black spot on operculum. Widely distributed throughout warm portions of the Indian and the Pacific Oceans, also common on warmer coasts of Japan.

Seriola quinqueradiata Temminck & Schlegel

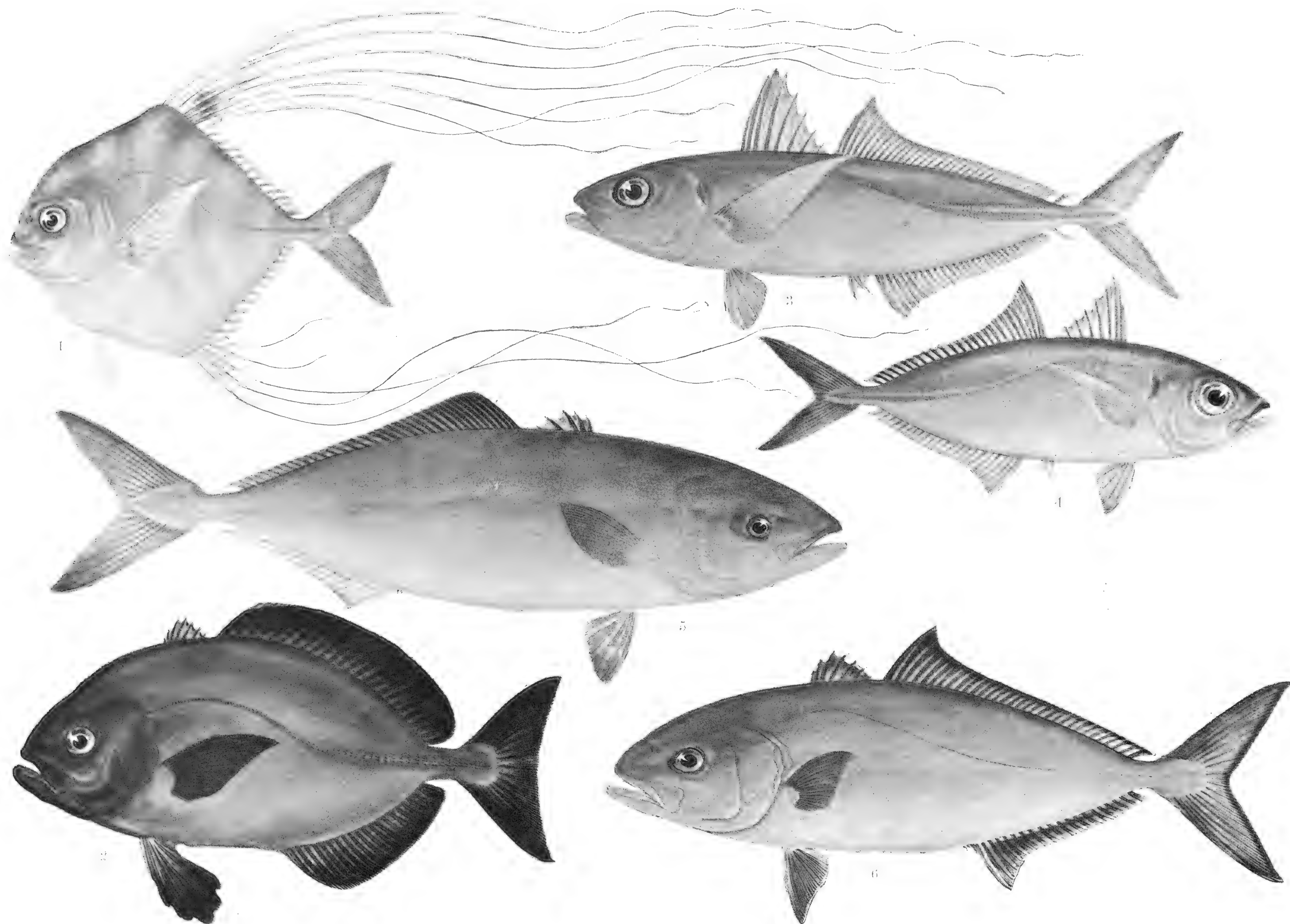
“ Buri ”
PL. XXVIII, fig. 5. × ¹ / ₅
D. VI, I, 30 to 34; A. II, I, 17 to 20; scales 200.

Length of body equal to 3²/₅ times that of head, and to 3⁹/₁₀ depth of body. Body a little compressed, dorsal profile of head nearly straight. Snout pointed, conical, and very much longer than diameter of eye, being three times its measurement. Maxillary extending somewhat beyond front border of eye (nearly to centre of eye in young). This species distinct from all other species of *Seriola* in Japanese waters in having a less curved head, a longer and more pointed snout, a smaller eye, the maxillary with an acute upper corner at its posterior end, and decidedly inclined backwards, pre-opercle obliquely descending backwards and strongly curved at the angle, the gill rakers not shorter than eye, a slender caudal peduncle, the pectoral not shorter than the ventral. Colour of body is deep-blue above, belly silvery, and with a yellow longitudinal band on side, and verteial fins faintly tinged with yellow. This fish attains to from 700 to 900 mm. in length, and from 800 to 1000 gr. in weight. Very widely distributed from Hokkaido to Formosa in Japanese seas, and on both coasts of the Atlantic Ocean. Caught in abundance in Autumn and Winter; much esteemed for its taste, and an economically valuable food fish of Japan.

Seriola purpurascens Temminck & Schlegel

“ Kanpati ”
PL. XXVIII, fig. 6. × ¹ / ₄
D. VII, I, 32 to 33; A. II, I, 19 to 22; scales 150.

Length of body equal to 3³/₁₀ times that of head, and to 3 times depth of body; length of head equal to 5⁷/₁₀ times diameter of eye, and to 2²/₃ times length of snout. Body rather strongly compressed; its thickness twice its depth. Dorsal profile evenly and rather strongly curved from origin of dorsal to tip of snout. Snout obtuse, much longer than eye, rather longer than inter-orbital space. Maxillary reaching centre of eye; its posterior end broad and convex, with rounded corners; ventral inserted below posterior part of base of pectoral, and rather longer than latter. Colour of body purplish-brown above, whitish below; a yellow longitudinal band extends from behind middle of upper jaws, through eye, to base of caudal; fins dark and olivaceous; anal edged with white. Distributed all over Japan; fairly frequently caught, although less abundant than the former species; it is consumed as food.



オニマジ
Megalaspis corpyla (Linné)
 （第二十九圖版　第一圖）×1
 <p>D. VIII, I, 10, 8 to 9; A. II, I, 8 to 10, 6 to 8; scutes 50.</p>

　體長は頭長及體高の3³/₁₀倍あり。吻は稍尖り、主上顎骨は眼の中央に迄達し、下顎は上顎より稍長し。上顎の齒は狭き齒帶をなし、下顎は1列、鋤骨、口蓋骨、舌上に細齒あり。骨質鱗は極めて高く、側線の直線的部分全部を覆へり。側線の前方強く彎曲す。

　體は濃青色にして、下部銀白色、鰓蓋後縁に黒點あり。骨質鱗は褐色なり。本種は廣く暖海に分布し、本邦南部に現はるゝも少し。體長300耗に達し、食用に供せらる。

カイワリ
Caranx equula Temminck & Schlegel
 （第二十九圖版　第二圖）× ² / ₃
 <p>D. XIII, I, 24 to 25; A. II, I, 23; scutes 28.</p>

　體長は頭長の3¹/₆倍、體高の2乃至2¹/₆倍あり。體高は稍高く、背外廓は強き彎曲をなせり。吻は眼徑より長く、主上顎骨は瞳孔の前縁に達す。側線は前方に於て彎曲し、第十五軟條下より後方に直線的になれり。尾柄には7個の骨質鱗あり。胸鰭は頭長より長し。體は濃青色にして下方白く、幼時にありては6個の横帶を見る。體長200乃至300耗に達し、廣く食用に供せらる。

キンカメアジ
Caranx sexfaciatus Quoy & Gaimard.
 （第二十九圖版　第三圖）× ² / ₃
 <p>D. VIII, I, 20 to 21; A. II, I, 16 to 17; scutes 30.</p>

　體長は頭長の3³/₁₀倍、體高の2¹/₁₀倍あり。體は楕圓形にして、背外廓は吻端より背鰭に至る間、滑かに彎曲し、腹外廓は下顎より腹鰭基底に至る間僅に彎曲し、臀鰭基部は直線的なり。主上顎骨は瞳孔の後縁或はそれより稍延長す。側線は前方に於て彎曲し、其長さは直線部より短かし。體は濃青色にして下方銀白色骨質鱗は褐色なり。背鰭、尾鰭は灰色にして胸鰭、臀鰭は薄し。本種は熱帶地方に廣く分布し、本邦南方迄來る。體長約200耗に達し、食用として美味なり。

シマアジ
Caranx delicatissimus (Döderlein)
 （第二十九圖版　第四圖）× ¹ / ₂
 <p>D. VIII, I, 24 to 25; A. II, I, 21 to 22; scutes 26.</p>

　體長は頭長の3¹/₆倍、體高の2⁹/₁₀倍あり。體形は前者に類似すれど、頭部は前者より高からず。背外廓全體に緩曲線をなす。吻は尖り眼徑より遙に長し。主上顎骨は眼の前縁に達せず。側線は第十三軟條下より直線となれ

り。屈曲せる部は直線部より長し。鰓蓋骨には鱗あれど前鰓蓋骨、下鰓蓋骨にはなし。

　體は濃青色にして、下方白し。本邦太平洋沿岸に廣く分布し、體長400耗に達す。味ひ甚だ佳良なり。

マアジ
Trachiurus japonicus Temminck & Schlegel
 （第二十九圖版　第五圖）×1
 <p>D. VIII, I, 31 to 33; A. II, I, 27 to 29; scutes 69 to 72.</p>

　體長は頭長の3¹/₁₀倍、體高の4倍あり。體は長く、側扁せり。吻は尖り、眼徑より長く、眼間隔より稍短かし。下顎は上顎よりも長く、主上顎骨は瞳孔の前縁に達せり。齒は細し。側線は背鰭第十八軟條下より直線となる。彎曲せる部分は直線部より稍長し。

　體は濃青色にして、腹部白く、骨質鱗は黃色なり。本邦太平洋沿岸廣く分布し、鰯類中最も多く漁獲され、廣く食用に供さる。體長大なるものは300耗に達す。

オアカアジ
Decapterus russelli (Ruppel)
 （第二十九圖版　第六圖）×1
 <p>D. VIII, I, 30 to 32, I; A. II, I, 24 to 26, I; scutes 45.</p>

　體長は頭長の3¹/₂倍、體高の5倍あり。體は圓く細長く、僅に側扁せり。吻は眼徑より長く、主上顎骨は眼窩前縁に達せり。兩顎の齒は1列にして、上顎齒は其數多し。鋤骨及口蓋骨に齒あり。舌上は甚だ小さし。下鰓蓋骨は其後縁凹形を呈し、下方は斜前方に向へり。側線は僅に彎曲し、背鰭第十四軟條より直線となれり。骨質鱗は側線の直線部を覆へり。體は濃青色にして、下方銀白色、骨質鱗は黃色なり。凡ての鰭は赤色を呈す。印度洋より本邦暖海に至る間廣く分布し、夏期伊豆七島附近に饒産す。體長350耗に達し、味ひ佳良なり。

ムロアジ
Decapterus muroadsi (Temminck & Schlegel)
 （第二十九圖版　第七圖）×1
 <p>D. XIII, 31 to 33, I; A. II, I, 26 to 28, I; scutes 33.</p>

　體長は頭長の4倍、體高の4¹/₁₀倍あり。體形前者に似るも其異る點は、各鰭は灰色にして赤味を有せず。臀鰭軟條の數多く、舌上に帶狀をなす齒ある事なり。體は濃青色にして、腹部銀白色、吻端より背部を經尾柄に至る赤褐色(死後は直ちに黃色となる)の一縱帶あり。軟條の邊緣、尾鰭の下縁、各對鰭は紫色を帶べり。本種はマアジに次ぐ普通種にして本邦に廣く分布し、體長400耗に達す。マアジより肉緊り良く鹽乾品として美味なり。

Megalaspis cordyle (Linné)
“Oniadi”
 PL. XXIX, fig. 1.　　×1

　D. VIII, I, 10, 8 to 9; A. II, I, 8 to 10, 6 to 8; scutes 50.

　Length of body equal to 3⁹/₁₀ times that of head, or depth of body. Snout pointed, maxillaries extending to centre of eye, lower jaw longer than upper. Teeth in upper jaw in a very narrow band; those on the lower in a single row; vomer, palatines, and tongue with minute teeth. Scutes very high, present along whole length of straight portion of lateral line; lateral line strongly arched, becoming straight below middle of pectoral. Colour of body is deep-blue above, silvery below, black spot on opercle; scutes brownish. This species is widely distributed in the tropical seas of the Pacific, occasionally occurring along the southern coast of Japan. It grows to about 300 mm. in length, and is consumed as food.

Caranx equula (Temminck & Schlegel)
“Kaiwari”
 PL. XXIX, fig. 2.　　× ² / ₃

　D. XIII, I, 24 to 25, A. II, I, 23; scutes 28. Length of body equal to 3¹/₆ times that of head, and to 2 to 2¹/₆ times the depth of body. Body rather high, with strongly but evenly profile; snout rather longer than diameter of eye, maxillary extending beyond front border of pupil; lateral line a little arched, becoming straight below fifteenth soft dorsal ray; its curved portion much longer than its straight portion. Caudal peduncle with seven scutes, pectorals longer than length of head. Colour of body deep-bluish above, ventral silvery. Six pale bands present across the body in young, disappearing with age. This is one of the commonest species of *Caranx* occurring in southern Japan, and its range extends northwards as far as the Prefecture of Isikawa on Japan Sea coast, and to the Prefecture of Iwate on the Pacific coast. Length of the body attains to about 200 to 300 mm.; much esteemed as food.

Caranx sexfaciatus Quoy & Gaimard
“Ginkameadi”
 PL. XXIX, fig. 3.　　× ² / ₃

　D. VIII, I, 20 to 21; A. II, I, 16 to 17; scutes 30. Length of body equal to 3³/₁₀ times that of head, and to 2⁷/₁₀ times depth of body. Body oblong, nape rather elevated, dorsal profile gradually and almost evenly curved from tip of snout to dorsal fin, ventral profile curved from tip of mandible to base of ventral, and thence very slowly descending to origin of anal almost in a straight line. Maxillary extending to or beyond posterior border of pupil. Lateral line rather strongly arched, anteriorly becoming straight below sixth dorsal, the curved portion of the line shorter than the straight, Body is deep blue above, silvery below, scutes are brownish; dorsal and caudal fins greyish; ventral and anal fins pale. This species is widely distributed throughout the Indian Ocean and the warm seas of the Pacific coast. It is also one of the commonest species of *Caranx* occurring in the warmer parts of Japan. It attains to about 200 mm. in length, and is much esteemed as food.

Caranx delicatissimus (Döderlein)
“Sima-adi”
 PL. XXIX, fig. 4.　　× ¹ / ₂

　D. VIII, I, 24 to 25; A. II, I, 21 to 22; scutes 26. Length of body equal to 3¹/₆ times that of head, and to 2⁹/₁₀ times depth of body. Body resembles

the preceding in form, having nape less elevated, and dorsal profile curved almost evenly from origin of soft dorsal to tip of snout. Snout pointed, very much longer than eye; maxillary not reaching front border of eye. Lateral line becoming straight below thirteenth soft dorsal ray, which is before middle of fin; the curved portion longer than the straight. All parts of gill-cover scaly, except preopercle, free margins of inter-opercle, and sub-opercle. Body is deep-bluish above, and silvery below. This species occurs on the Pacific coast of Japan, and grows to 400 mm. in length; much esteemed as a valuable food fish.

Trachiurus japonicus (Temminck & Schlegel)
“Ma-adi”
 PL. XXIX, fig. 5.　　×1

　D. VIII, I, 31 to 33; A. II, I, 27 to 29; scutes 69 to 72.

　Length of body equal to 3⁷/₁₁ times that of head, and to 4 times depth of body. Body a little compressed, elongated, oblong in shape. Snout pointed, longer than diameter of eye, which is rather shorter than inter-orbital space; lower jaw longer than upper; maxillary scarcely reaching anterior border of pupil. Teeth very fine. Lateral line becomes straight below eighth soft dorsal ray; the curved portion rather longer than the straight. Body is dark-bluish above, silvery below; scutes yellowish. Widely distributed along coasts of Japan and in north-eastern Korea. Caught in abundance and much esteemed as food.

Decapterus russelli (Rüppell)
“O-aka-adi”
 PL. XXIX, fig. 6.　　×1

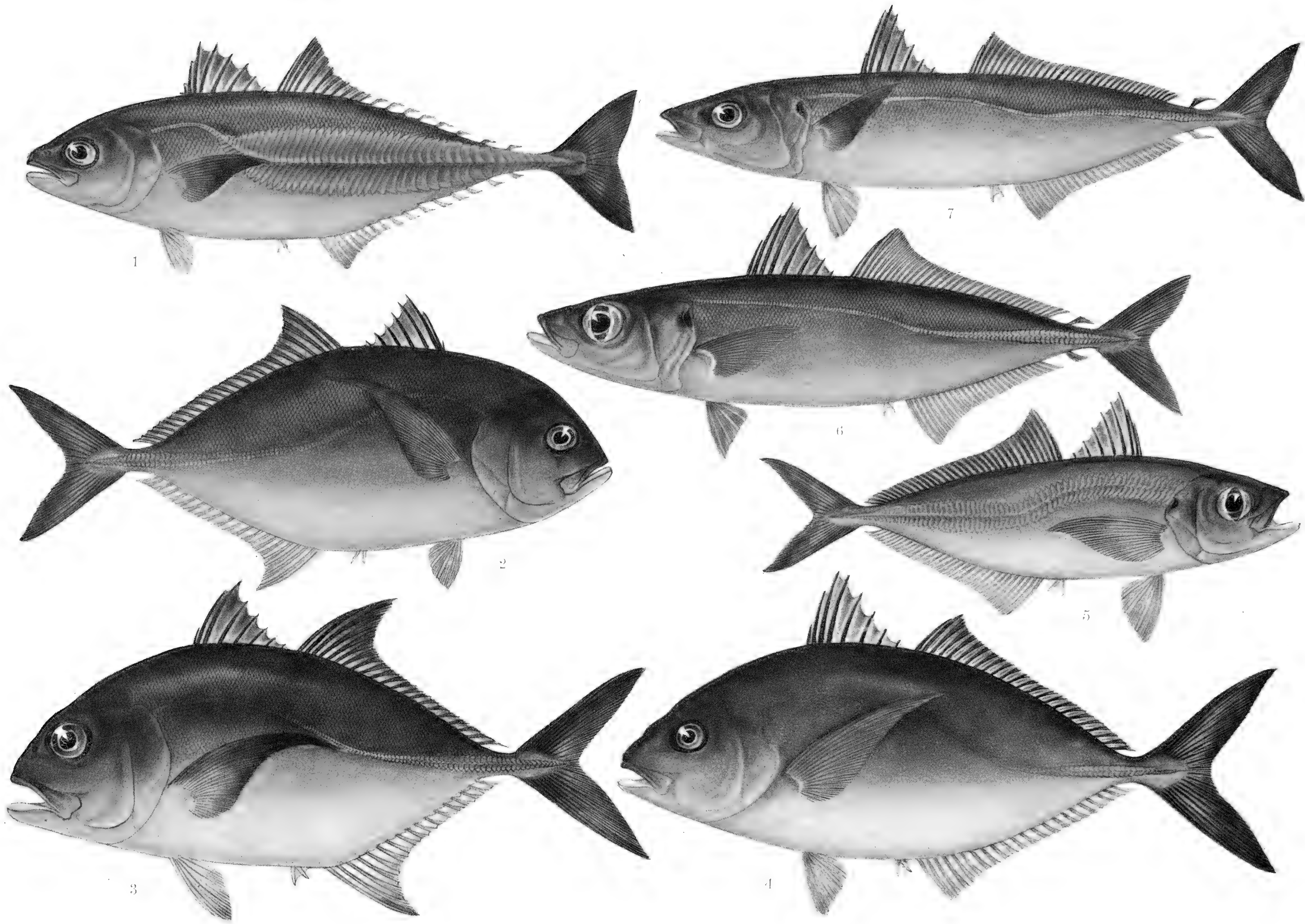
　D. VIII, II, 30 to 32, I; A. II, I, 24 to 26, I; scutes 45.

　Length of head equal to 3¹/₂ times that of head, and to 5 times depth of body. Body scarcely compressed, snout much longer than eye, maxillaries scarcely reaching front border of eye. Teeth in each jaw in a single row; but on upper jaw more numerous at anterior end; those on vomer small, palatines toothed. Sub-opercle distinctly concave n posterior margin, descending obliquely at forward portion. Lateral line slightly arched, becoming straight at fourteenth soft dorsal ray, which is at middle of fin; scutes distinct along nearly whole length of straight portion of lateral line. Body deep-bluish above, silvery below, scutes yellowish; all fins are reddish. This species is widely distributed throughout the Indian Ocean and the warm seas of the Pacific coast, specially caught in abundance in Summer in the Bonin Islands. It grows to 350 mm. in length, and is much esteemed as food.

Decapterus muroadsi (Temminck & Schlegel)
“Muro-adi”
 PL. XXIX, fig. 7.　　×1

　D. VIII, I, 31 to 33; I; A. II, I, 26 to 28, I; scutes 33.

　Length of body equal to 4 times that of head; and to 4⁷/₁₀ times depth of body. Body much resembles in form the preceding, differing in having all fins greyish, in anal having more soft rays, and in having teeth on tongue in band. Body bluish above, silvery below, a broad reddish-brown band, which turns yellow after death, running from tip of snout to base of upper lobe of caudal; top of soft dorsal, lower lobe of caudal, basal part of anal, and paired fins faintly washed with purple. This species is common along the warm coasts of Japan. It grows to about 400 mm. in length, and is much esteemed as food.



イボダヒ

Psenopsis anomala (Temminck & Schlegel)

（第三十圖版 第一圖）×1⁄2

D. VI, 29; A. III, 26; scales 55.

體長は頭長の4倍、體高の3倍にして、頭長は眼徑の

4倍、吻長の31⁄2倍なり、體は楕圓形にして外廓は緩曲す、

頭は短く其外廓は急斜し、眼は小に、吻は尖る、背

鰭は鰓孔上に始まり、其の邊緣は稍直線をなす、臀鰭は

背鰭より僅に小なり、胸鰭は小にして後縁は稍鎌狀を呈し、

腹鰭は小さく、尾鰭は深叉狀をなす、鱗は小圓なり、

兩顎に小齒あれども口蓋には齒なし、體青色なり、

マナガツヨ

Stromateus argenteus (Euphrasen)

（第三十圖版 第二圖）×1⁄2

D. V, 42; A. III, 35.

體長は頭長の33⁄4倍、體高の2倍にして、頭長は眼徑の

5倍、吻長の41⁄3倍なり、體卵形にして背部甚だ上昇す、

頭は短く其外廓は急斜す、眼は小にして吻は尖る、

背鰭は胸鰭中央上に始まり、胸鰭は稍長大にして鎌狀を

なさず、腹鰭を缺く、尾鰭は深叉狀をなし、鱗は小にして

側線は隆起せず、體銀灰色にして、東印度洋より南日本

の間に分布す、頗る美味なり、

テンジクダヒ ×1

Apogon lineatus Temminck & Schlegel

（第三十圖版 第三圖）

D. VII, I, 9; A. II, 8; scales 25.

體長は頭長の24⁄5倍、體高の22⁄5倍にして、頭長は眼徑の

3倍、吻長の5倍なり、體は稍頑強にして、背部は

少しく上昇す、眼は大に、其の上縁は僅に上方に突出し、

吻は短く鈍し、下顎は上顎より長く、上顎骨は眼の後縁

に達す、兩顎、鋤骨、及び口蓋骨に絨毛齒あり、鰓蓋の後

縁は鋸齒をなす、體は淡紅色にして數條の褐色線あり、

小形なり、

ネンブツダヒ

Apogon semilineatus Temminck & Schlegel

（第三十圖版 第四圖）×1

D. VII, I, 9; A. II, 8; scales 25.

體長は頭長の21⁄2倍、體高の22⁄5倍にして、頭長は吻

長及び眼徑の32⁄5倍なり、體は稍延長側扁し、頭は寧ろ

大にして尖り、外廓は稍直線をなす、眼は大にして上部

にあり、吻は尖る、下顎は僅かに突出し、上顎骨は鰓孔

の後縁下に達す、鱗は大にして粗し、體は淡紅色にして、

體側前部に2條の短き褐色線あり、第一背鰭の頂端には

1個の大なる黒色斑點あり、尾鰭基底部に黒褐色の1班

點を有す、南日本に産す

オキヒイラギ

Leiognathus rinulata (Temminck & Schlegel)

（第三十圖版 第五圖）×1

D. VIII, 16; A. III, 11.

體は延長し、稍相稱にして側扁し、外廓は弱く彎曲す、

頭は短く、眼は中等大なり、口は前端にありて寧ろ小さく

兩背鰭及臀鰭は短く、弱く、稍寧しき棘及刺を有すれども

前者は少しく長し、尾鰭は深く叉狀をなす、胸鰭は

中等に長く、稍高く後方に於て先端尖る、腹鰭は小にし

て胸鰭基底下に在り、鱗なし、體色濃青色にして下部は

大いに光澤あり、體長80 耗に達し、或時期には河口に

上る、

タカベ

Labracoglossa argentiventris Peters

（第三十圖版 第六圖）×1

D. X, 27; A. III, 13; scales 62.

體長は頭長の32⁄5倍、體高の31⁄5倍にして、頭長は眼

徑の31⁄2倍、吻長の41⁄5倍なり、體は延長側扁し、其の外

廓は緩曲す、頭は小にして外廓は稍直線なり、眼は中

等大にして側方にあり、吻は短く尖る、背鰭は胸鰭中央

上部に始まり、棘は細長にして缺刻により軟背鰭と連続す、

胸鰭は中等大にて尖り、腹鰭は胸鰭基底の後方に始まる、

尾鰭は深叉狀をなす、鱗は中等大にて櫛狀なり、體

緑青色にして下部淡く、背部に近く1條の中廣き黃色帶

あり、胸鰭、腹鰭及び臀鰭は黃色なり、高價ならず、

シイラ

Coryphaena hippurus Linné

（第二十圖版 第七圖）×1⁄6

D. 55; A. 26; scales 175.

體長は頭長の42⁄5倍、體高の5倍にして、頭長は眼徑

の6倍、吻長の3倍なり、體は延長側扁し、前部に於て

最高なり、上顎骨は眼の後縁下に達す、吻の外廓は眼と

稍垂直なり、雄は前頭部上昇し、上顎より稍長き頭飾を

形成す、眼は小にして吻長の半なり、背鰭は眼の上部近

くに起り、尾鰭の近く迄延長す、尾鰭は深叉狀をなす、

體銀色に輝き上唇は綠色を呈し下部白色なり、體側に綠

色の班點を有す、背鰭は紫青色にして、胸鰭、臀鰭、及

び腹鰭邊緣は青色を呈す、

Psenopsis anomala (Temminck & Schlegel)

“Ibodai”

PL. XXX, fig. 1. ×1⁄2

D. VI, 29; A. III, 26; scales 55.

Length of body 4 times that of head, 3 times

depth of body. Length of head 4 times diameter

of eye, 31⁄2 times length of snout. Body broadly

elliptical, with evenly curved profile. Head shortish,

with steeply inclined profile. Eye smallish, anterior;

snout pointed. Dorsal inserted over gill opening,

with straight free margin; anal a little smaller

than dorsal. Pectoral smallish, with subtruncate

posterior margin; ventral rather small, caudal

deeply forked. Scales rather small, cycloid. Small

teeth in jaws, none on palate. Body uniformly

bluish.

Stromateus argenteus (Euphrasen)

“Managatuwo”

PL. XXX, fig. 2. ×1⁄2

D. V, 42; A. III, 35.

Length of body 33⁄4 times that of head, twice

depth of body. Length of head 6 times diameter of

eye, 41⁄3 times length of snout. Body ovoid, with

much elevated back. Head shortish, with steeply

inclined profile. Eye small, snout pointed. Dorsal

fin inserted over middle of pectoral, with strongly

falcate free margin; anal opposite dorsal, being

similar to it in form. Pectoral rather large, not

falcate; no ventrals. Caudal deeply forked. Scales

very small; lateral line not keeled. Body silvery-

grey. A fish of East Indian Seas, extending in

range to southern Japan where it is appreciated

as food by epicures.

Apogon lineatus Temminck & Schlegel

“Tendikudai”

PL. XXX, fig. 3. ×1

D. VII, I, 9; A. II, 8; scales 25.

Length of body 21⁄5 times that of head, and

22⁄5 times depth of body. Length of head 3 times

diameter of eye, and 5 times length of snout.

anteriorly blunt, the back a little elevated. Eye

large, its upper edge projecting slightly above

back contour of head, snout shortish, bluntly

pointed. Lower jaw a trifle the longer, maxillary

extending a little short of posterior edge of eye.

Teeth villiform in jaws, and on vomer and palatines.

Posterior edge of opercle has large serrations

near the angle. Body light-pinkish, with several

narrow brownish lines. A small shore fish.

Apogon semilineatus Temminck & Schlegel

“Nenbutudai”

PL. XXX, fig. 4. ×1

D. VII, I, 9; A. II, 8; scales 25.

Length of body 21⁄2 times that of head, 22⁄5

times depth of body. Head 32⁄5 times diameter

of eye or length of snout. Body rather elongated,

compressed; head rather large, pointed, with

sub-straight profile. Eye large and high up. Snout

pointed. Lower jaw slightly projecting; maxillary

extending a little beyond vertical through posterior

margin of pupil. Scales large, and rough. Body

pinkish in colour; there are 2 short brownish

lines on anterior portion of body; first dorsal

with a large blackish patch at tip; caudal base

with a dark-brown spot. A small fish of southern

Japan.

Leiognathus rivulata (Temminck & Schlegel)

“Oki-hiiragi”

PL. XXX, fig. 5. ×1

D. VIII, 16; A. III, 14.

Body elongated sub-symmetrical and compressed;

its outline gently curved. Head short, eyes

moderately large. Mouth terminal rather small,

protrusile. Both dorsal and anal fins short,

slender, with sub-equal spines and rays, anterior

ones being a little longer; caudal deeply

forked. Pectoral moderately large, somewhat

high, with pointed tip posteriorly; ventrals

small, inserted beneath base of pectoral. No

scales. Body deep-blue, much lighter below.

It attains to a length of 80 mm., entering

estuarine waters at certain seasons. Not

good as food.

Labracoglossa argentiventris Peters

“Takabe”

PL. XXX, fig. 6. ×1

D. X, 27; A. III, 23; scales 62.

Length of body 32⁄5 times that of head, 31⁄2

times depth of body. Length of head 31⁄2 times

diameter of eye, 41⁄6 times length of snout. Body

elongated, compressed, with gently curving

profile. Head smallish, with sub-straight

profile. Eye moderately large, lateral. Snout

shortish, pointed. Dorsal inserted over middle

of pectoral, its spines slender, continuous its

soft part being notched; anal inserted at 6th

ray of dorsal, similar in form to soft dorsal.

Pectoral moderately large, pointed; ventral

inserted behind base of pectoral; caudal

deeply forked. Scales moderately large; finely

ctenoid. Colour of body greenish-blue, silvery

below; a broad yellow band runs near back;

vertical fins generally yellowish; pectoral

yellowish on upper half, silvery on lower;

ventral silvery. A food fish for lower

classes.

Coryphaena hippurus (Linné)

“Siira”

PL. XXX, fig. 7. ×1⁄6

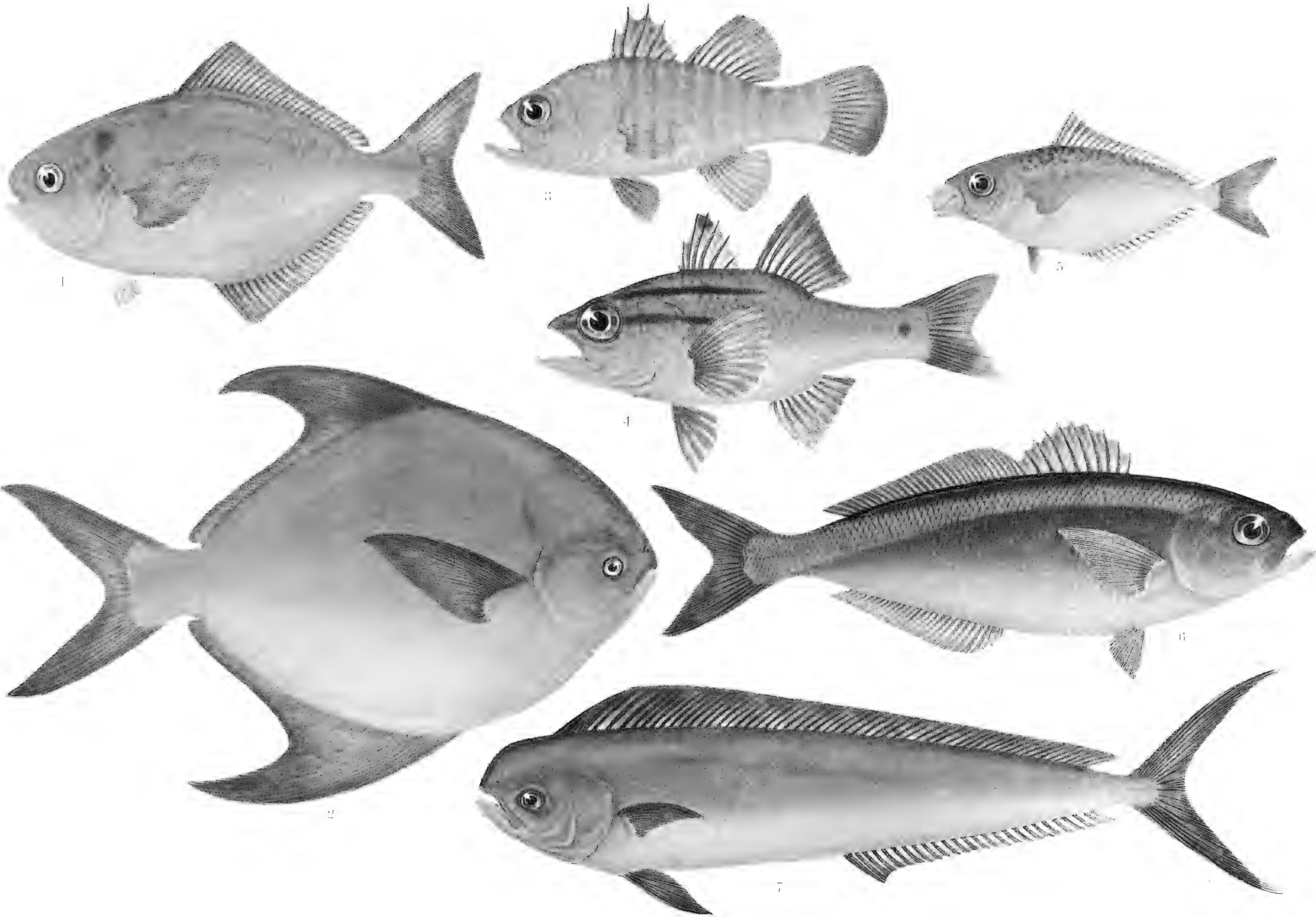
D. 55; A. 26; scales 175.

Length of body 42⁄5 times that of head, 5

times depth of body. Head 6 times diameter

of eye, 3 times length of snout. Body

elongated, compressed, highest anteriorly;





イシガキダヒ
 Oplegnathus punctatus (Temminck & Schlegel)
 （第三十一圖版 第一圖） × 2 / 3
D. XII 15；A. III. 13；scales 110.

體長は頭長の31/6倍、體高の13/4倍にして、頭長は眼徑の41/2倍、吻長の11/2倍なり。體は高く強く側扁す。頭は中等に高く、邊緣は傾斜す。吻は突出し、口は小にして前方にあり。上顎骨は第二鼻孔の下部に達し齒は鋭し。背鰭は胸鰭の前に起り、胸鰭は短く固し。腹鰭は臀鰭に達せず。鱗は頗る小にして櫛狀なり。體は褐色にして黒褐色の斑點あり。軟背鰭、臀鰭及び尾鰭に小點あり。鼻孔は黑色なり。南日本に産す。

テングダヒ
 Evistias acutirostris (Temminck & Schlegel)
 （第三十一圖版 第二圖） × 1 / 2
D. IV, 29；A. III, 13；scales 62.

體長は頭長の31/6倍、體高の13/6倍、頭長は眼徑の32/5倍、吻長の24/5倍なり。體は高く側扁し上縁は不等なる彎曲をなし、頬より臀鰭にかけ殆んど直線にして以後急曲す。頭は比較的低く、縁線は凸形をなし、吻基に於て幾分凹形をなす。前眼窩は深し。背棘強く第3棘は第4棘の半にして頭長より短く第一軟條の半より小なり。鰭の外縁は僅かに凸形をなし、尾鰭は新月形なり。體はオリーブ色にして6條の幅廣き横黒色帶あり。腹鰭及び胸鰭基底以外の鰭は青白色なり。南日本に産し、漁獲多からず。

イシダヒ
 Oplegathus fasciatus (Temminck & Schlegel)
 （第三十一圖版 第三圖） × 1 / 2
D. XI, 17；A. III, 12；scales 95.

體長は頭長の3倍、體高の13/4倍にして、頭長は眼徑の41/2倍、吻長の24/5倍なり。體は高く側扁す。頭は中等に高く上縁は傾斜す。眼は稍高く吻は突出し、口は中等にして上顎骨は第二鼻孔の下部に達し、齒は邊緣鋭し。眼隔は凸形なり。鱗は頗る小に櫛狀なり。背鰭及び臀鰭基底には鱗あり。背鰭は胸鰭の前方に始る。臀鰭は前方に於て高く、漸次後方に低し。尾鰭は大なり。體は褐色にして7條の暗黒色の横帶あり。南日本に産し漁獲少し。

キンカガミ
 Mene maculata (Bloch & Schneider)
 （第三十一圖版 第四圖） × 2 / 3
D. III, 40；A. 30.

體長は頭長の4倍、體高の13/4倍にして、頭長は眼徑及び吻長の3倍なり。體は卵圓形にして、前部高し。背面は殆んど水平なり。下方外廓は腹鰭基底方向に上昇しそれより尾鰭に向ひて緩曲す。口は傾斜し前方にありて小なり。上顎骨は滑かにして眼縁の前方に達し、口蓋骨は完全なり。齒は兩顎にありて絨毛狀なり。背鰭は前部に於て高し。尾鰭は深く叉狀をなす。體は銀色にして胸鰭以上の上半身に2又は3條の大なる斑點あり。熱帶地方より南日本の間に分布する小魚なり。

アカタチ
 Acanthocepola krusensterni (Temminck & Schlegel)
 （第三十一圖版 第五圖） × 1 / 2
D. 80；A. 76；scales 165.

體長は頭長の112/5倍、體高の132/3倍あり。頭長は眼徑の31/2倍、吻長の5倍なり。體は頗る延長し側扁す。頭は側扁し、眼は吻より長く、吻は鈍し。下顎は突出す。口は頗る傾斜し、兩顎には一列の強き齒あり。眼隔は扁平にして、背鰭及臀鰭は尾鰭をめぐりて連續す。背鰭は低く體高に稍同じ。尾鰭は絲狀に延長し先端尖る。鱗は甚だ小に櫛狀なり。體は全體赤色にして稍暗色の斑點あり。臀鰭及び尾鰭は黒色の狭縁を有す。南日本に少産す。

スギ
 Rachycentron canadum (Linné)
 （第三十一圖版 第六圖） × 1 / 3
D. VIII, 1, 16；A. II, 25.

體は延長し紡錘狀にして、滑かなる小鱗を以て覆はる。側線は背面に並行なり。頭部は幅廣く低し。口は中等にして上顎骨は短く眼窩の前方に達す。胸鰭は廣く鎌狀なり。第一背鰭には8本の強き分離せる棘あり。軟背鰭は長く稍鎌狀をなす。臀鰭は軟背鰭に對立し、尾鰭は強くして叉狀をなす。體色青褐色にして體側に明瞭なる黒色の廣帶あり。下部は銀色なり。熱帶地方に廣く分布し南日本にも産す。一般には消費されず。

Oplegnathus punctatus (Temminck & Schlegel)
 “Isigakidai”
PL. XXXI, fig. 1. × 2 / 3

D. XII, 15；A. III, 13；scales 110.
Length of body 31/6 times that of head, and 13/4 times depth of body. Length of head 41/2 times diameter of eye, and 11/2 times length of snout. Body deep, strongly compressed. Head moderately deep, with oblique profile. Snout projecting. Mouth small, terminal, maxillary reaching below second nostril；teeth with sharp cutting edge. Dorsal inserted in front of pectoral fin；pectoral short and rounded. Ventral not reaching anal. Scales very small, ctenoid. Brownish, coarsely spotted and mottled blackish-brown all over；smaller spots on soft dorsal, anal, and caudal；nostrils blackish. A fish of southern Japan. Its occurrence is rather rare.

Evistias acutirostris (Temminck & Schlegel)
 “Tengudai”
PL. XXXI, fig. 2. × 1 ¹ / ²

D. IV, 29；A. III, 13；scales 62.
Length of body 31/6 times that of head, and 13/5 times depth of body. Length of head 32/5 times diameter of eye, and 24/5 times length of snout. Body deep, compressed, upper outline forming an unequal curve, lower nearly straight from chin to anal fin；there abruptly angulated. Head relatively low, profile convex about the eyes, and somewhat concave at base of projecting snout. Pre-orbital very deep. Dorsal spines stout, graduated, the third about half the fourth, which is a little shorter than the head and a little more than half the first soft ray；soft rays progressively shortened, outer edge of fin slightly convex, caudal lunate. Colour of body olive, with six broad blackish cross-bands. Fins, except ventral and base of pectoral, pale. A fish of southern Japan. Occurs rather rarely.

Oplegnathus fasciatus (Temminck & Schlegel)
 “Isidai”
PL. XXXI, fig. 3. × 1 / 2

D. XI, 17；A. III, 12；scales 95.
Length of body 3 times that of head, and 13/4 times depth of body. Length of head 42/3 times diameter of eye, and 24/5 times length of snout. Body deep, compressed. Head moderately deep, with oblique upper profile；eye rather high, snout projecting. Mouth moderate, maxillary extending below the second nostril. Teeth with sharp cutting edge. Inter-orbital space convex. Scales very small, ctenoid. Base of dorsal and anal scaled. Dorsal inserted before pectoral；anal highest in front and sloping behind；caudal emarginated, brownish, with seven dark, black, vertical bands, these becoming fainter with age. A fish of southern Japan. Not caught abundantly.

Mene maculata (Bloch & Schneider)
 “Ginkagami”
PL. XXXI, fig. 4. × 2 / 3

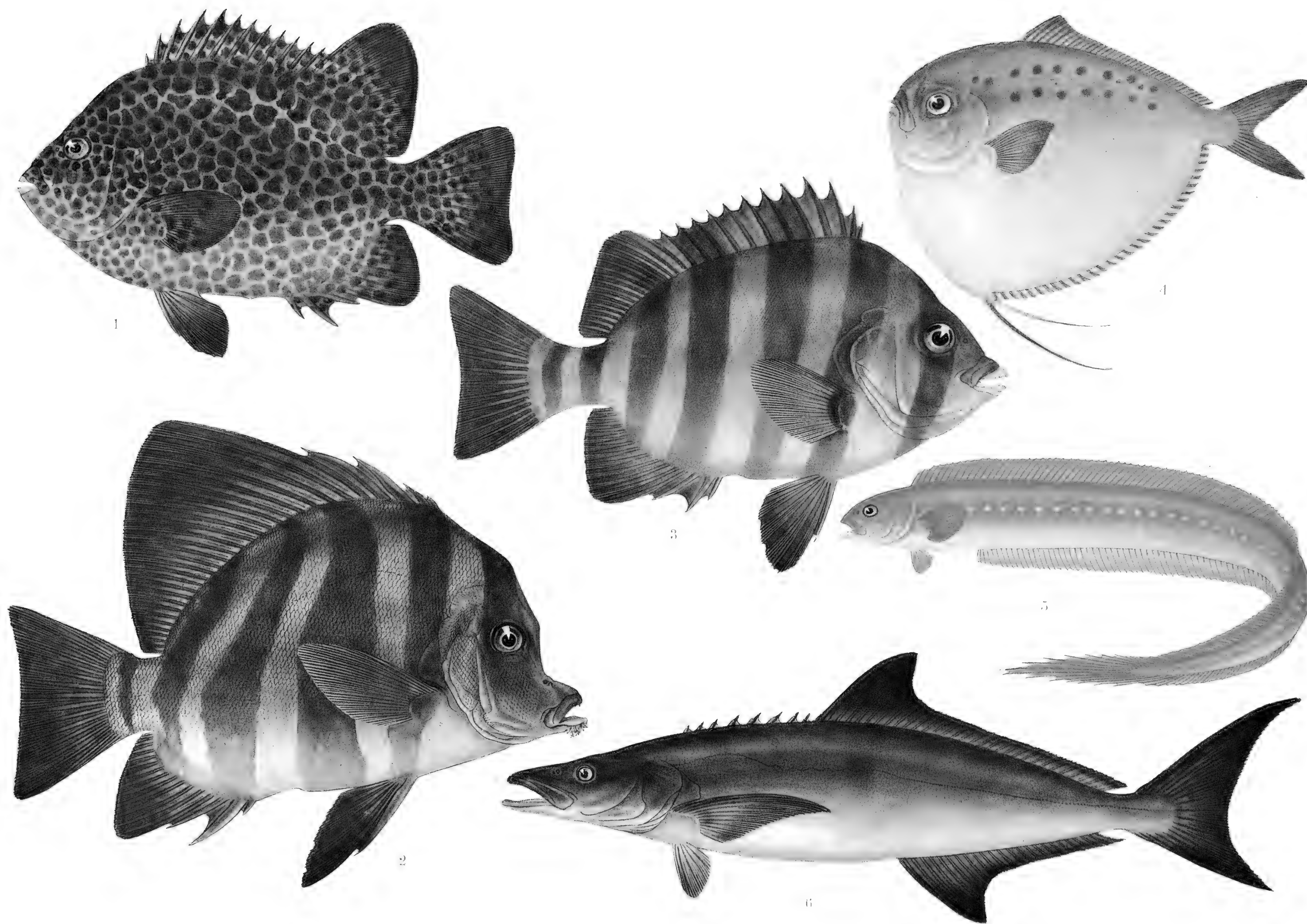
D. III, 40；A. 30.
Length of body 4 times that of head, 13/4 times depth of body. Length of head 3 times diameter of eye, or length of snout. Body ovoid, deepest anteriorly. Dorsal profile nearly horizontal, the lower outline very abruptly descending to the base of ventral fin, from whence it gently curves as far as the beginning of caudal. Mouth oblique, rather small, terminal. Maxillary smooth, extending to below anterior edge of eye. Opercle entire. Occipital crest high. Villiform teeth in jaws. Dorsal fin highest anteriorly. Caudal deeply forked. Silvery in colour. 2 or 3 rows of large spots along upper half of body above level of pectoral fin. A small fish found in the tropics, its range extending to southern Japan.

Acanthocepola krusensterni (Temminck & Schlegel)
 “Akatai”
PL. XXXI, fig. 5. × 1 / 2

D. 80；A. 76；scales 165.
Length of body 112/5 times that of head, 132/5 times depth of body. Length of head 31/2 times diameters of eye, 5 times length of snout. Body very elongated and compressed. Head compressed, eye larger than snout which is very bluntly pointed. Lower jaw produced. Mouth very oblique, each jaw with a single row of strong teeth. Inter-orbital space flattened. Dorsal and anal continuous round the caudal. Dorsal fin low, more or less equal in height. Caudal produced to a filamentous point. Scales very small, and cycloid. Colour of body almost uniformly bright reddish, with spots of rather deeper shade；anal and caudal narrowly margined with black. A fish of southern Japan. Occurs rather rarely.

Rachycentron canadum (Linné)
 “Sugi”
PL. XXXI, fig. 6. × 1 / 3

D. VIII, I, 26；A. II, 25.
Body elongated, fusiform, covered with very small, smooth scales. Lateral line parallel with back. Head broad, low. Mouth moderate；maxillary short, reaching front of orbit. Pectorals broad, falcate. First dorsal represented by 8 low, stout, free spines, each depressible in a groove；soft darsal long, rather low, somewhat falcate；anal opposite soft dorsal and similar in form to it；caudal strong, forked. Olive-brown, with a distinct darker broad band on sides；silvery below；widely distributed between the tropics, ranging from them northwards to southern Japan. Not consumed generally as food.





the same as the one in the first part of the paper. The first part of the paper is devoted to the study of the properties of the function $f(x)$ which is defined by the equation

$$f(x) = \frac{1}{2} \left(\frac{1}{x} + \frac{1}{x+1} \right) \quad (1)$$

for $x > 0$. It is shown that the function $f(x)$ is increasing and concave down.

It is also shown that the function $f(x)$ has a horizontal asymptote at $y = 1/2$ as $x \rightarrow \infty$. The function $f(x)$ is also shown to be a solution of the differential equation

$$x^2 f''(x) + x f'(x) - f(x) = 0 \quad (2)$$

for $x > 0$. The function $f(x)$ is also shown to be a solution of the integral equation

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (3)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (4)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (5)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (6)$$

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$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (25)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (26)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (27)$$

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$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (30)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (31)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (32)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (33)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (34)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (35)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (36)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (37)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (38)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (39)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (40)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (41)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (42)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (43)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (44)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (45)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (46)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (47)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (48)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (49)$$

$$f(x) = \frac{1}{2} \int_0^{\infty} \frac{1}{x+t} dt \quad (50)$$

ウミブナ

Malakichthys griseus Döderlein

（第三十二圖版 第一圖） ×¹/₃

D. IX, I, 10; A. III, 7; scales 40.

體長は頭長の2³/₅倍、體高の2⁴/₅倍あり。頭長は眼徑の6³/₅倍、吻長の4倍なり。體は橢圓形にして側扁し頭は尖る。背部は中等に高く、外縁は眼の後方に於て僅に曲る。口は大にして傾斜し下顎は突出す。兩顎、鋤骨及び口蓋骨の齒は絨毛狀にして舌には齒なし。前鰓蓋骨は圓く邊緣薄く、其の上下角は弱き鋸齒狀をなす。鰓蓋骨には2個の薄く短き棘あり。鱗は中等に大きく櫛狀をなす。背棘は胸鰭基底の稍後方に始まり軟背鰭より高し。體は銀青色にして3條の縦縞あり。第3棘後方の背棘膜の邊緣に小黑點あり。漁獲多からず。

ムツ

Scombrops boops (Houttuyn)

（第三十二圖版 第二圖） ×¹/₃

D. VIII, I, 13; A. III, 13; scales 53.

體長は頭長及び體高の3¹/₂倍にして頭長は吻長の4¹/₂倍、眼徑の3¹/₂倍なり。體は延長し、滑かなる鱗を有す。頭は長く尖り、口は甚だ大にして傾斜し、下顎は僅かに突出す。兩顎齒は1列にして犬齒狀をなし、下顎齒は側方のもの長し。上顎前方には3個又は4個の大なる齒あり。鋤骨及び口蓋骨に鋭き小齒を有す。頭部には唇部及び鰓條部を除く總てに鱗を有し、體には小にして離脱し易き鱗あり。體は銅青又は褐色にして腹部は稍黄色なり。日本各地の沿岸に産し、比較的深所に棲息す。體長400耗に達し甚だ美味なり。

アラ

Niphon spinosus Cuvier & Valenciennes

（第三十二圖版 第三圖） ×¹/₃

D. XII, I, 10; A. III, 7; scales 165.

體長は頭長の2⁴/₅倍、體高の3¹/₂倍、頭長は眼徑の6³/₅倍、吻長の2⁴/₅倍なり。體は稍延長側扁す。背部は中等に高く、第3背棘の下に於て最高なり。吻は長く鋭くして下顎は突出す。兩顎、鋤骨、及び口蓋の齒は絨毛狀なり。前鰓蓋骨の角には1個の強き棘ありて後方に向ひ其の上縁には小棘存す。鱗は稍小に櫛狀をなし、頬、口蓋、眼下環及び後頭部には鱗あり、體は淡褐色にして下部淡し。尾鰭は其上下に青白色の狭條あり。幼少なるものは體に暗色の縦縞あり。軟背鰭に黒點あり。寧ろ深海魚にして廣く消費せらる。

スズキ

Lateolabrax japonicus (Cuvier & Valenciennes)

（第三十二圖版 第四圖） ×¹/₃

D. XII, I, to II, 12; A. III, 8; scales 105.

體長は頭長の3¹/₃倍、體高の4倍あり。頭長は眼徑の5¹/₃倍、吻長の3³/₄倍なり。體は長橢圓形にして側扁し背部は稍高く第3背棘の下に於て最高なり。兩顎齒及び鋤骨口蓋骨の齒は絨毛狀にして舌には齒なし。前鰓蓋骨は角狀をなし。角上には2又は3個の強き突起ありて後方及び下方に向ふ。口蓋骨には2棘あり。下方のもの長し。頭頂、頬、口蓋、及び眼下環には鱗あり。上顎骨及下顎に齒なし。體色上部はオリーブ色にして背棘基底の兩側に沿ひて黒點の線あり。又背鰭及び側線の中間に小黑點の不規則線あり。南日本に産し、食用魚として重要なり。

イシナギ

Stereolepis isinagi (Hilgendorf)

（第三十二圖版 第五圖） ×¹/₃

D. XII, 11; A. III, 7; scales 87.

體長は頭長の2⁹/₁₀倍、體高の2³/₄倍にして、頭長は吻長の3²/₅倍なり。體は側扁し、吻は稍短し。眼隔は扁平にして、前眼窩及び下眼窩は邊緣強く、上顎骨は眼窩の後縁下に達す。兩顎齒及び鋤骨、口蓋骨の齒は絨毛帶をなし、舌には齒なし。鰓蓋骨には2棘ありて、上部のものは短く、下部のものは長く尖る。前鰓蓋骨は強く鋸齒狀をなす。頭部及び體幹には圓鱗ありて、後部のものは僅かに櫛狀をなす。體表面は粗なり。鰭には小鱗あり。

側線は背外廓に沿ひて存す。第一背棘は甚だ短く、第五棘最長なり。體暗青色にして6條の暗色横帶あり。頭部上方は暗色、軟背鰭、臀鰭、及び胸鰭邊緣は暗黑色にして軟背鰭上部は白色の狭條を有す。北日本に産す。體長1¹/₂米、體重 50 疋に達し、大なるものは2米、70疋に達するものあり。水深 100 米乃至 500 米の岩礁に棲息し、春期産卵す。

Malakichthys griseus Döderlein

“Umibuna”

PL. XXXII, fig. 1. ×¹/₃

D. IX, I, 10; A. III, 7; scales 40.

Length of body 2³/₅ times that of head, and 2⁴/₅ times depth of body. Length of head 6³/₅ times diameter of eye, and 4 times depth of body. Body oblong, compressed, head pointed. Back moderately elevated. Profile slightly angled behind eye. Mouth large, oblique, lower jaw produced. Villiform teeth in jaws and on vomer and palatines, tongue toothless. Pre-operculum rounded, thin towards margin, with rather weak serratures both above and below the angle; operculum with 2 thin flat short spines. Scales moderately large, finely ctenoid. Spinous dorsal inserted a little behind base of pectoral, higher than soft dorsal. Colour silvery; and olivaceous; 3 longitudinal stripes. A small black blotch near margin of each membrane of spinous dorsal behind third spine. Does not occur abundantly.

Scombrops boops (Houttuyn)

“Mutu”

PL. XXXII, fig. 2. ×¹/₃

D. VIII, I, 13; A. III, 13; scales 53.

Length of body equal to 3¹/₂ times that of head, or depth of body; length of head equal to 4¹/₃ times that of snout, and to 3¹/₂ times diameter of eye. Body rather elongated, covered with small, thin smooth scales; head elongated, and pointed; mouth very large, not very oblique; lower jaw slightly produced. Teeth in a single row in jaws, canine-like, very sharp; those of lower jaw largest on the sides; the corresponding ones of the upper jaw much smaller; a group of 3 or 4 large teeth on anterior part of upper jaw; very small, sharp teeth on vomer and palatines. Head completely sealed except on lips and branchiostegal region; body with rather small, smooth scales which are easily displaced. Colour steel-blue or brownish in young; belly being more or less yellowish. Generally common on coasts of Japan in water of considerable depths (50 to 600 metres deep), and grows to about 400 mm. in length. It is an excellent food fish, the flesh soft and the ovary much esteemed by epicures.

Niphon spinosus Cuvier & Valenciennes

“Ara”

PL. XXXII, fig. 3. ×¹/₃

D. XII, I, 10; A. III, 7; scales 165.

Length of body 2⁴/₅ times that of head, and 3¹/₂ times depth of body. Length of head 6³/₅ times diameter of eye, and 2³/₄ times length of snout. Body rather elongated, compressed. Back moderately elevated, deepest portion under third dorsal spine. Profile straight; snout long and sharp; lower jaw produced. Villiform teeth in jaws, and on vomer and on palatines. A single strong backwardly directed spine at the angle of the pre-operculum, and a number of short spines along

margin above it. Scales rather small, ctenoid; cheeks, opercles, sub-orbitals, and occiput sealed. Colour of body light-brownish, much lighter below; caudal with a narrow pale edge on lower and upper lobes. The young have a longitudinal dark stripe on body and a black blotch on soft dorsal. A deep-sea fish. Consumed extensively as food.

Lateolabrax japonicus (Cuvier & Valenciennes)

“Suzuki”

PL. XXXII, fig. 4. ×¹/₃

D. XII, I to II, 12; A. III, 8; scales 105.

Length of body 3¹/₃ times that of head, 4 times depth of body. Length of head 5¹/₅ times diameter of eye, 3³/₄ times length of snout. Body oblong, slender, compressed, back little elevated, highest under third dorsal spine. Villiform teeth in jaws, and on vomer and palatines; no teeth on tongue. Pre-operculum with a distinct angle; above the angle 2 or 3 strong points, directed backwards and downwards; below it 3 or 4 antrorse teeth. Operculum with two spines of which the lower is much the larger. Top of head, cheeks, opercles and sub-orbitals scaled; maxillary and lower jaw scaleless. Colour olive above; an interrupted line of black spots along each side of base of spinous dorsal; an irregular row of small black spots midway between dorsal and lateral line. A fish of southern Japan, being among the important food fishes of this country.

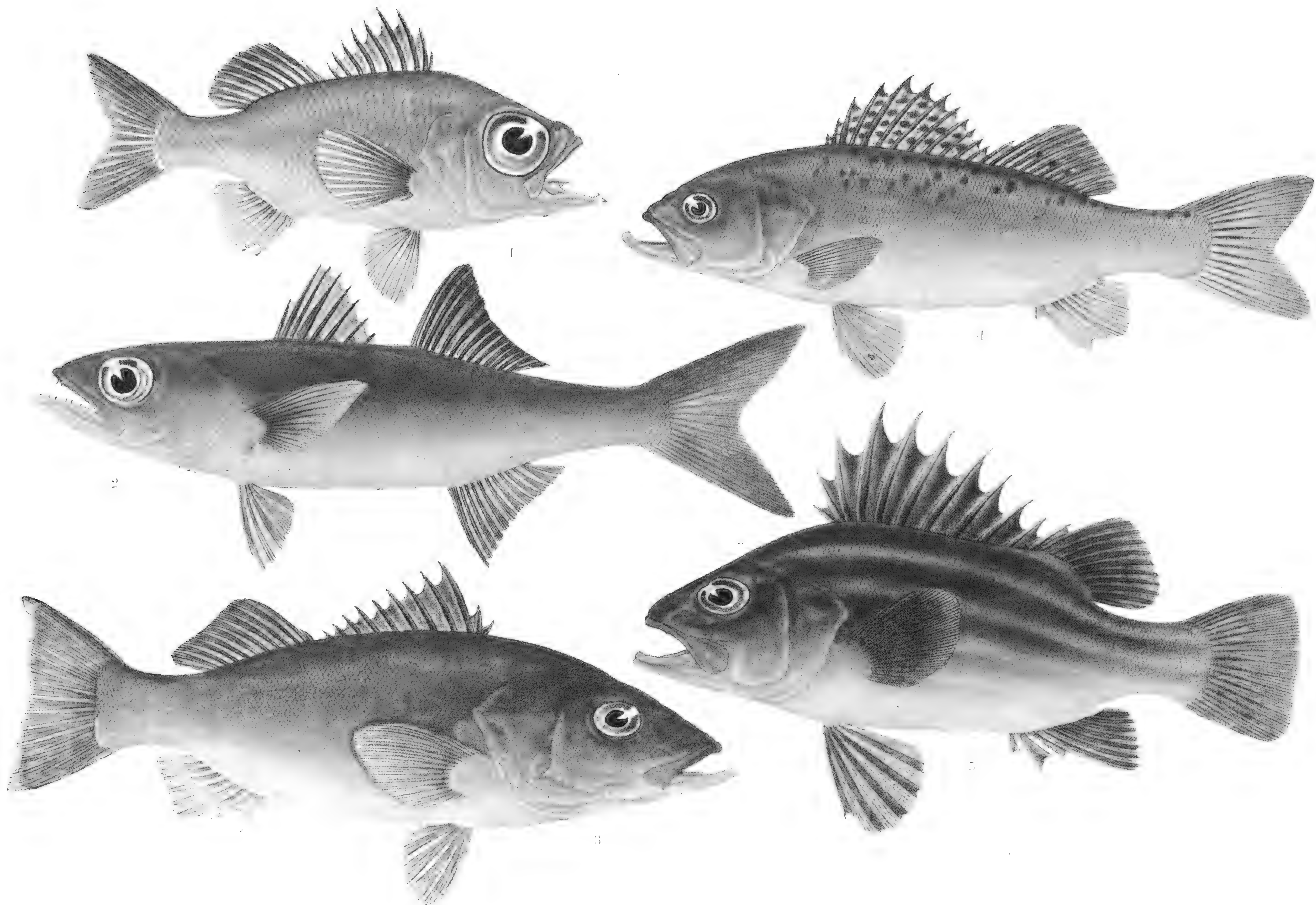
Stereolepis isinagi (Hilgendorf)

“Isinagi”

PL. XXXII, fig. 5. ×¹/₃

D. XII, 11; A. III, 7; scales 87.

Length of body equal to 2⁹/₁₀ times that of head, and to 2³/₄ times depth of body; length of head equal to 3²/₅ times that of snout. Body stout, and compressed; snout rather short. Inter-orbital space flat; pre-orbital and sub-orbital with strong ridges; maxillaries extending to a vertical through posterior edge of orbit. Teeth in jaws and on vomer and palatines in broad villiform bands, tongue smooth. Opercle with 2 spines, the upper short and broad, but the lower longer and more pointed; pre-opercle strongly serrated; scales of head and body cycloid, growing slightly ctenoid posteriorly; each scale with a vertical, tuberculate ridge; imparting characteristic roughness to the covering of the body; fins with minute scales; lateral line following the contour of the back; first dorsal spine very short and almost entirely concealed; its fifth ray longest. Body olivaceous, with 6 broad lateral dusky stripes; head dusky above; soft dorsal, anal, and pectorals strongly edged with dusky colour; soft dorsal narrowly tipped with a whitish colour. This species is of common occurrence in northern Japan, growing to about 1.5 metres in length, and to 50 kg. in weight; the maximum size 2 m. in length, 70 kg. in weight. It lives on rocky bottoms 300 m. to 500 m. deep; spawning in Spring.





in two rows, confined to the sides of the lower jaw, produced light on upper jaw and the lower lip, also, but above and behind the upper outline which is very faintly defined and confined to the sides of the head.

[illegible]

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the situation.

[illegible]

Figure 6 shows the effect of the initial concentration of the monomer on the polymerization rate. The rate increases with increasing initial concentration of the monomer.

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コモンハタ
Epinephelus epistictus (Temminck & Schlegel)
（第三十三圖 第一圖） ×1/2
D. XI, 15；A. III, 8；scales 110.

體長は頭長の2 3/5 倍、體高の3 1/5 倍あり。頭長は眼徑の4 倍、吻長の4 倍なり。體は長橢圓形にして延長し側扁し、上部外廓は滑かに彎曲し、下部も亦同様なり。頭部外廓は峻しく吻は尖る。下顎長し。下顎内側の齒は2列にして犬齒は中等なり。背鰭は胸鰭基底の上部に起る。鱗は掌ろ小にして櫛形をなし、頭頂、口蓋、頬部及び眼下環は美鱗にて被はる。體は紫色にして體側には3 條の黒點排列し、軟背鰭、臀鰭及び尾鰭には黒點あり。南日本に産する小魚にして漁獲少し。

アヲアラ
Epinephelus awoara (Temminck & Schlegel)
（第三十三圖版 第二圖） ×1/2
D. XI. 16；A. III. 8；scales 95.

體長は頭長の2 4/5 倍、體高の3 1/3 倍あり。頭長は眼徑の4 2/5 倍、吻長の3 4/5 倍なり。體は長橢圓形にして側扁し外廓は前頭部に於て凸形をなし以後急峻す。吻は稍鈍く下顎は僅に長し。下顎齒は2列にして犬齒は中等なり。前鰓蓋角は僅に突出し2 乃至3 個の強き突起を有す。鱗は中等大にして櫛狀、頬部、口蓋、下顎及び頤には鱗あり。上顎骨は鱗なし。體は褐色にして5 條の幅廣き黒色横帶あり。南日本に産すれども少し。

ルリハタ
Anlacocephalus temmincki Bleeker
（第三十三圖版 第三圖） ×1
D. IX, 12；A. III, 8；scales 85.

體長は頭長の2 3/5 倍、體高の2 4/5 倍あり。頭長は眼徑の5 1/2 倍、吻長の2 4/5 倍なり。體は長橢圓形にして側扁し、頭部は稍大きく、吻は尖る。兩顎は殆んど等し。兩顎、鋤骨及び口蓋の齒は絨毛狀にして犬齒なし。舌は滑かなり。前鰓蓋骨縁は鋸齒狀をなし、口蓋には3 個の強き棘あり。背棘は低く尾鰭は截狀をなす。鱗は掌ろ小にして櫛狀をなし、頬部及び口蓋に鱗あり。側線は連續し高く、背鰭後方の下に於て甚だしく曲る。體は紫色にして下部は青白なり。背部に黃色の縦縞あり。南日本に産し、食用魚として重要ならず。

マハタ
Epinephelus septemfasciatus (Thunberg)
（第三十三圖版 第四圖） ×1/2
D. XI, 14；A. II, 9；scales 110.

體長は頭長の2 1/2 倍、體高の3 倍あり。頭長は眼徑の5 2/5 倍、吻長の3 4/5 倍なり。體は長橢圓形にして延長し僅に側扁す。背部外廓は腹部より彎曲多く、頭部外廓は廣く凸形をなし、下顎内側の齒は2 列にして犬齒は中等なり。鱗は掌ろ小にして櫛狀、頬部、口蓋、頭頂、下顎及び頤部には美鱗あり。體は褐色にして7 條の縦黒色帶あり。南日本に産す。

アカハタ
Epinephelus fasciatus (Forskål)
（第三十三圖版 第五圖） ×1/2
D. XI, 16；A. III, 8；scales 105.

體長は頭長の2 1/2 倍、體高の3 1/2 倍にして頭長は眼徑の5 1/10 倍、吻長の4 1/5 倍なり。體は稍延長側扁し。胸鰭基部に於て最高なり。口は僅かに上方に向ひ上顎骨は眼の中間を越ゆ。下顎は突出し、兩顎齒は細小にして、鋤骨及び口蓋骨に絨毛齒あり。前鰓蓋角は圓し。背鰭は胸鰭基底上に起り、棘部と軟條との間には淺刻を有す。體は上部黄赤色にして下部淡く、深黄赤色の横帶及び白點あり。眼の外縁には暗色の輪廓ありて、背棘間の膜には黒色縁あり。日本南部の淺き岩底に棲息す。體長 300 耗に達す。

ホウセキハタ
Epinephelus chlorostigma (Cuvier & Valenciennes)
（第三十三圖版 第六圖） ×1/2
D. XI, 17；A. III, 8；scales 110.

體長は頭長の2 1/2 倍、體高の3 1/4 倍あり。頭長は眼徑の7 1/3 倍、吻長の4 1/5 倍あり。體は長橢圓形にして側扁し、背面は中等に高し。外廓は直線にして吻尖る。下顎は突出す。下顎内側の齒は2 列にして犬齒は中等なり。前鰓蓋骨は後縁に於て鋸齒狀をなせども下方は然らず。鱗は小にして櫛狀をなし、頬部及び口蓋は小鱗を以て覆はる。後頭部には埋鱗あり。上顎骨及び下顎には多くの美鱗あり。尾鰭は稍截形をなす。體は褐色にして小なる圓形又は多角形の黒斑點あり。其他は青白色なり。1 米に達し、南日本に多し。

Epinephelus epistictus (Temminck & Schlegel)
“Komonhata”
PL. XXXIII, fig. 1. ×1/2

D. XI. 15；A. III, 8；scales 110.
Length of body 2 3/5 times that of head, and 3 1/5 times depth of body. Length of head 4 times diameter of eye or length of snout. Body oblong-elongated and compressed, with evenly curved upper outline which is nearly similar in shape to the lower. Profile steep but even, snout sharp. Lower jaw produced. Teeth on sides of lower jaw in two rows；canines moderate. Dorsal beginning over base of pectoral. Scales rather small, ctenoid；top of head, opercles, cheeks and sub-orbitals covered with fine scales. Colour purplish, each side with 3 rows of blackish spots；soft dorsal, anal, and caudal black-spotted. A small fish of southern Japan. Occurs rarely.

Epinephelus awoara (Temminck & Schlegel)
“Aoara”
PL. XXXIII, fig. 2. ×1/2

D. XI, 16；A. III, 8；scales 95.
Length of body 2 4/5 times that of head, and 3 1/3 times depth of body. Length of head 4 2/5 times diameter of eye, and 3 4/5 times length of snout. Body oblong, compressed；back low；profile broadly convex as far as forehead, whence the descent becomes steeper. Snout rather blunt；lower jaw slightly longer than upper. Teeth in sides of lower jaw in two rows, canines moderate. Pre-opercular angle only slightly produced；furnished with 2 or 3 moderately strong points. Scales moderately large, ctenoid；cheeks, opercles, lower jaw, and chin scaled；maxillary scaleless. Colour brownish, body crossed with 5 broad blackish bands. A rather rare fish；found occasionally in southern Japan.

Anlacocephalus temmincki Bleeker
“Rurihata”
PL. XXXIII, fig. 3. ×1

D. IX, 12；A. III, 8；scales 85.
Length of body 2 3/5 times that of head, and 2 1/5 times depth of body. Length of head 5 1/2 times diameter of eye, and 2 4/5 times length of snout. Body oblong and compressed；back moderately elevated. Head rather large and compressed, snout pointed. Jaws subequal. Villiform teeth in jaws and on vomer and palatines；no canines；tongue smooth. Pre-opercle serrated；opercle with 3 strong spines. Spinous dorsal low；caudal sub-truncate. Soales rather small, ctenoid；cheeks and opercles scaled；rest of head without scales. Late-ral line continuous, high, and strongly curved under back of dorsal. Colour purplish, paler below；it has a yellow mid-dorsal stripe. A fish of southern Japan. Unimportant as food.

Epinephelus septemfasciatus (Thunberg)
“Mahata”
PL. XXXIII, fig. 4. ×1/2

D. XI, 14；A. II, 9；scales 110.

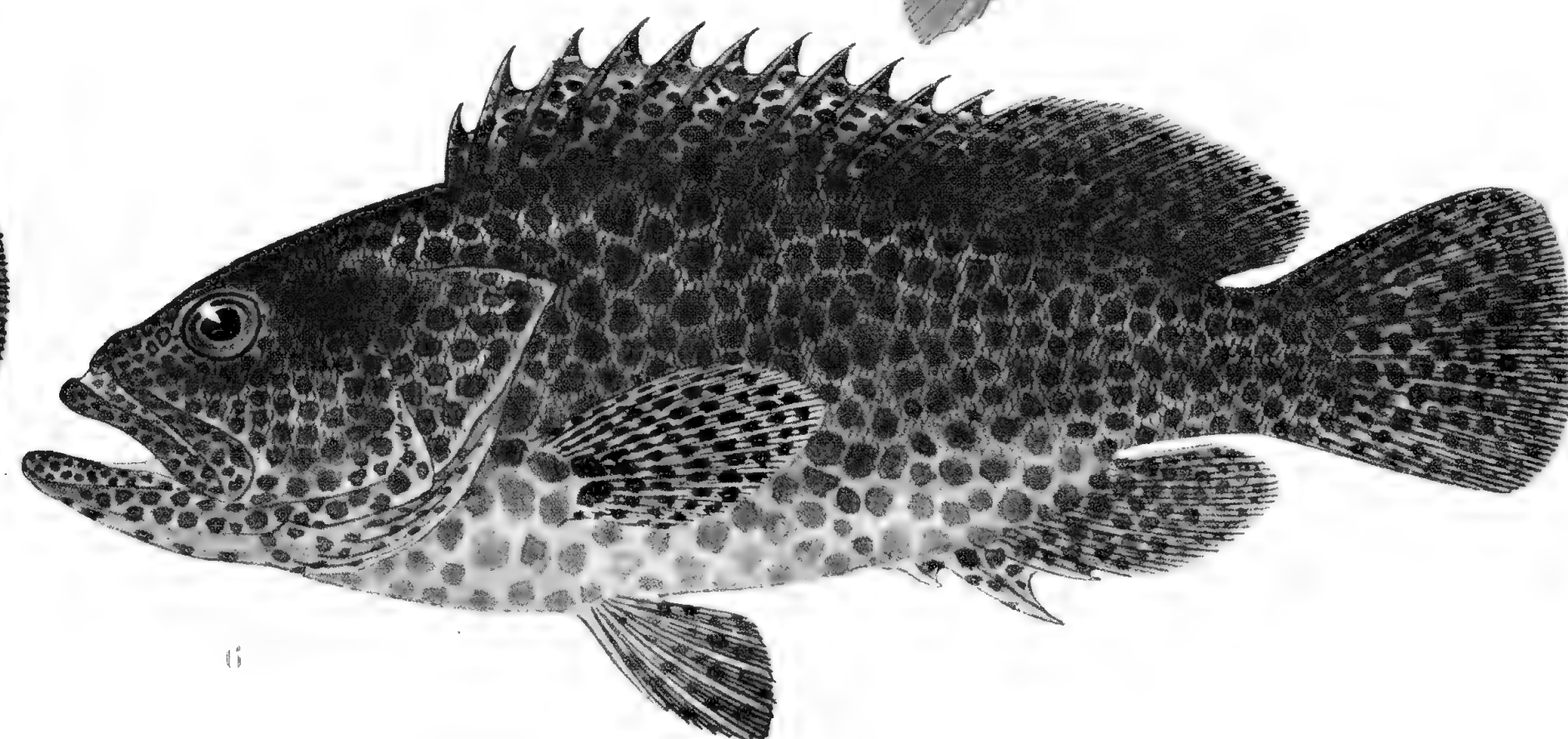
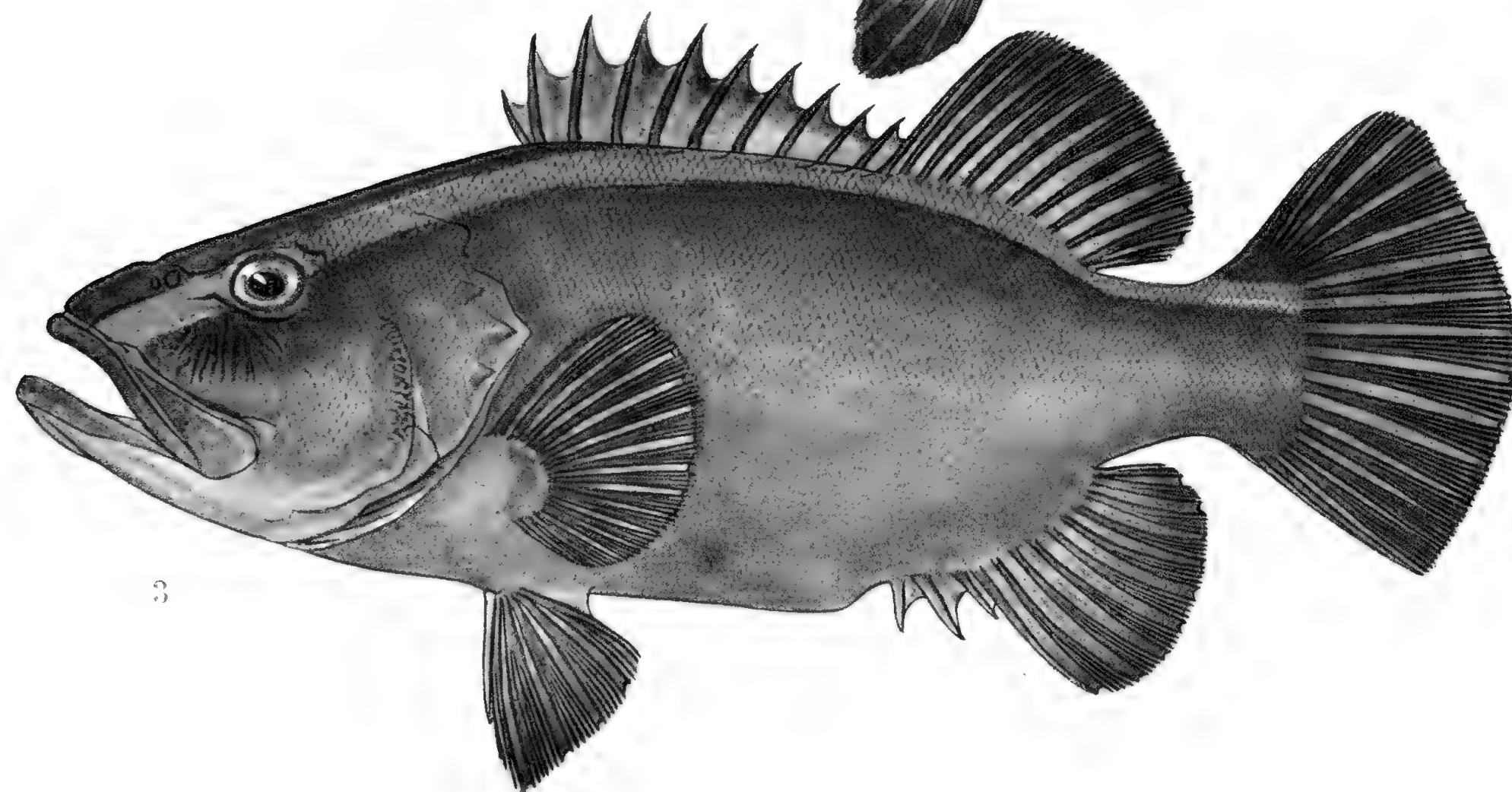
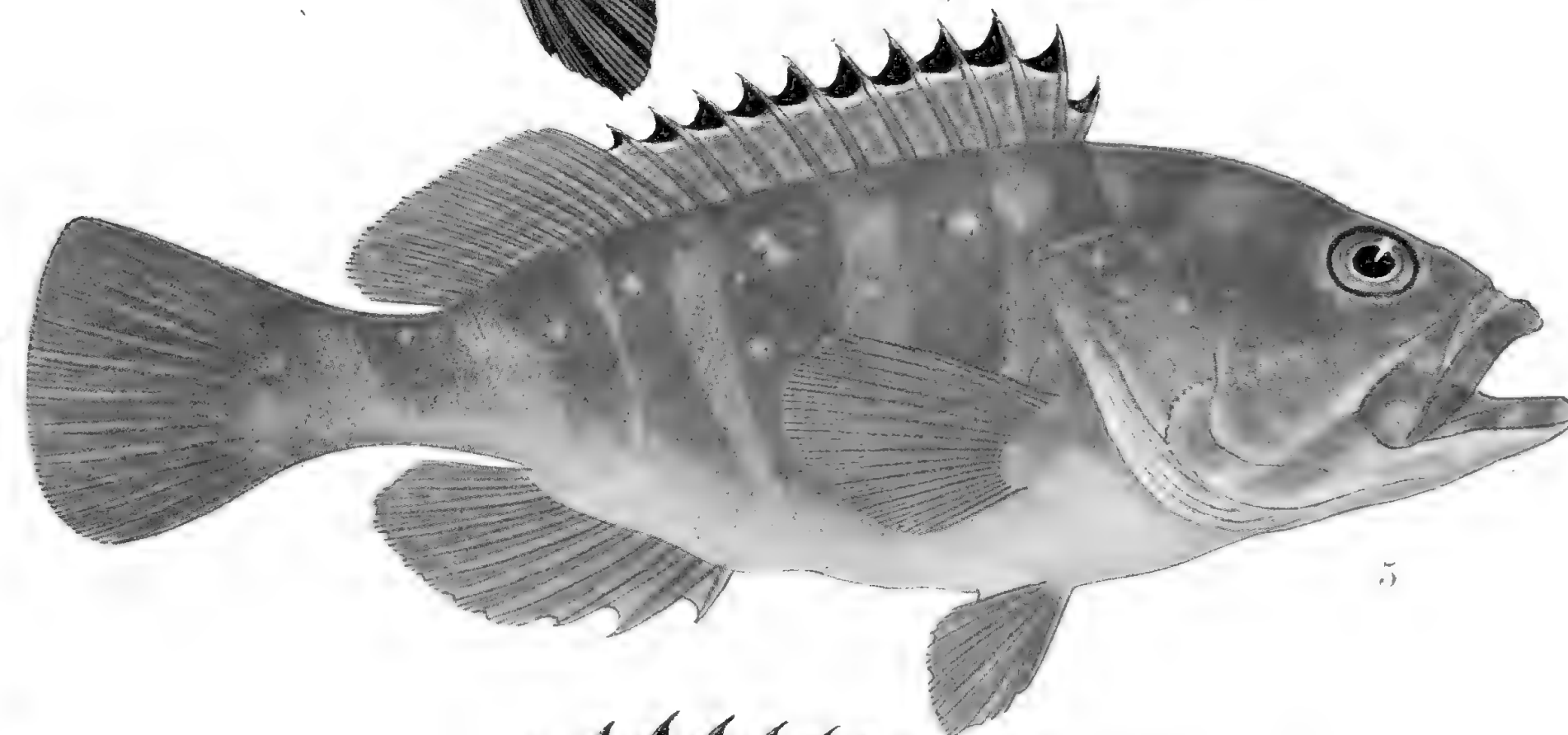
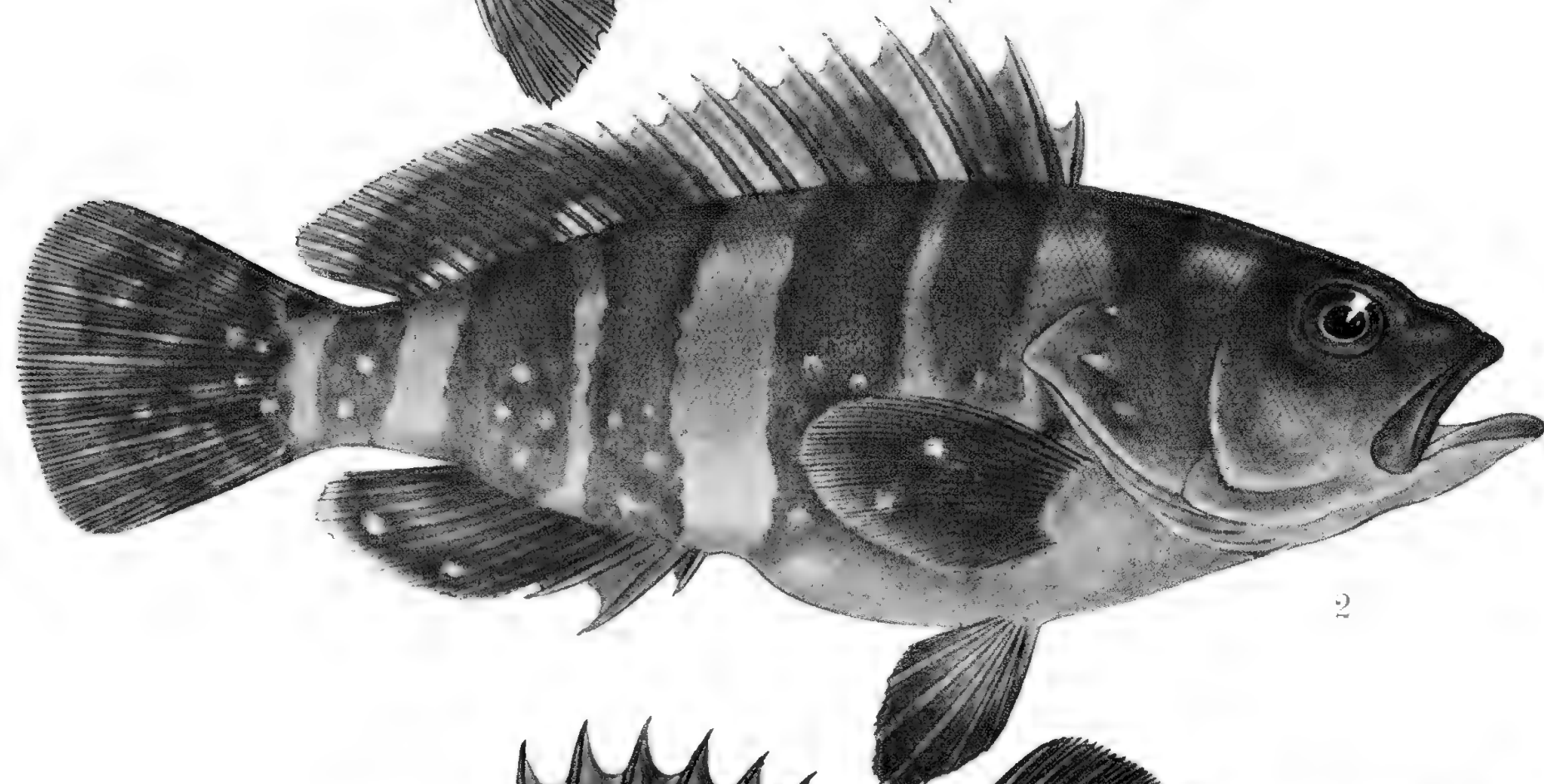
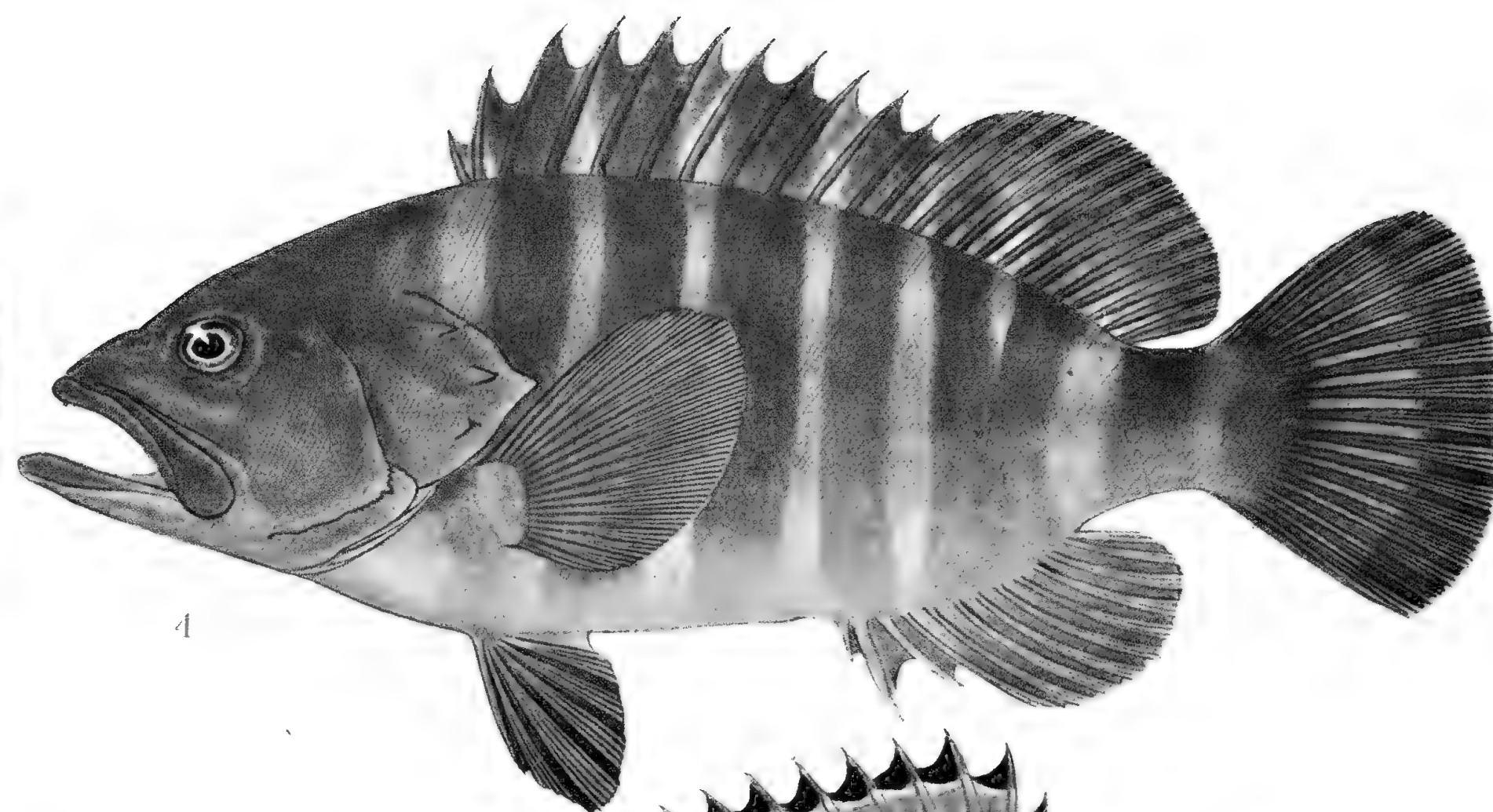
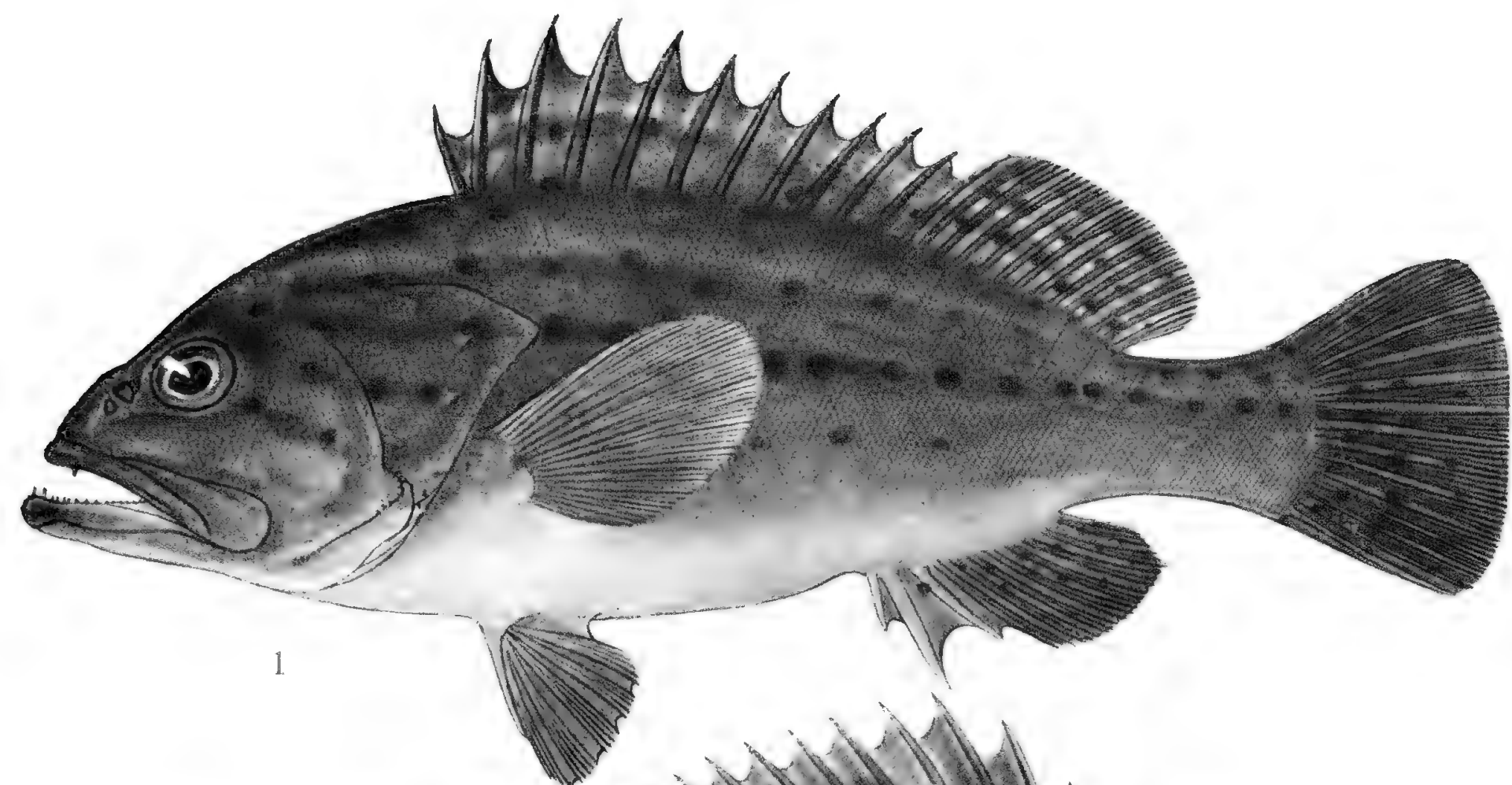
Length of body 2 1/2 times that of head, and 3 times depth of body. Length of head 5 2/5 times diameter of eye, and 3 4/5 times length of snout. Body oblong-elongated, rather thin and compressed. Dorsal outline more arched than ventral. Profile of head broadly convex, the descent over eye rather steep. Teeth on sides of lower jaw in two rows；canines moderate. Scales rather small, ctenoid；cheeks, opercles, top of head, lower jaw, and chin with fine scales；a small patch of very fine scales near tip of maxillary. Colour brownish, the body crossed by seven transverse bands of darker colours. A fish of southern Japan. Especially prized as one of the choicest fishes at Nagasaki.

Epinephelus fasciatus (Forskål)
“Aka-hata”
PL. XXXIII, fig. 5. ×1/2

D. XI, 16；A. III, 8；scales 105.
Length of body equal to 2 1/2 times that of head, and to 3 1/2 times depth of body；length of head equal to 5 1/10 diameter of eye, and to 4 1/5 length of snout. Body rather elongated and compressed；deepest part of body at base of pectoral. Head heavy, its sub-straight profile having a slight depression in front of eye. Mouth slightly oblique upwards, maxillary extending beyond middle of eye；lower jaw projecting, pre-maxillary protractile；teeth in jaws small mostly slender；villi-form teeth on vomer and palatines. Pre-opercle broadly rounded at angle where some seven serratures are visible. Dorsal originating above base of pectoral, slightly notched between spinous and soft portions. Colour of body yellowish orange above and on sides, lighter below；with deep orange cross-bands, whitish spots on sides；a narrow dark ring outside eye, inter-spinous membrane of dorsal black tipped. This species haunts shallow rocky bottoms in warmer waters in Japan. Usually caught by hand-line, gillnet, etc. It measures about 300 mm. in length, and is used as food.

Epinephelus chlorostigma (Cuvier & Valenciennes)
“Hōsekihata”
PL. XXXIII, fig. 6. ×1/2

D. XI, 17；A. III, 8；scales 110.
Length of body 2 1/2 times that of head, and 3 1/4 times depth of body. Length of head 7 1/3 times diameter of eye, and 4 1/5 times length of snout. Body oblong and compressed, back moderately elevated. Profile straight, snout sharp, lower jaw projecting. Teeth in sides of lower jaw in 2 rows；canines moderate. Posterior margin of pre-opercle serrated, but no serratures on lower margin. Scales small and ctenoid；cheeks and opercles covered with small scales；occiput with embedded scales；maxillary and lower jow with numerous fine scales. Caudal subtruncate. Colour brownish, everywhere covered with small roundish or polygonal dark spots, separated by narrow paler areas. This fish is among the largest of the species belonging to *Epinephelus*, attaining to length upwards of 1 metre. The choicest specimens are caught at Nagasaki.





イ サ キ
Parapristipoma trilineatum (Thunberg)
（第三十四圖版 第一圖） ×¹/₂
D. XIV, 17; A. III, 8; scales 115.

體長は頭長の 3 ¹/₂ 倍、體高の 3 ¹/₃ 倍あり、頭長は眼徑の 4 倍、吻長の 3 倍なり。體は延長し側扁す。背面外廓は腹面よりも彎曲大にして、頭部は殆んど直線をなせり。吻は短く稍闊くして、口は甚だ傾斜す。下顎は僅に突出し、上顎骨は眼の前縁下に達す。齒は小にして兩顎のみに存す。前鰓蓋骨は鋸齒状をなし、口蓋には普通棘なし。背棘は柔軟にして低く背鰭は分離せず。臀鰭棘は強く長し。鱗は稍小にして櫛状をなす。體は唇部を除く他皆鱗あり。上顎骨の表部には鱗の隆起あり。體は黒青色にして幼稚なるものは 3 條の狭く明瞭なる線あり。南日本の沿岸に産し、食用として尊重せられ殊に夏期に於て美味なり。

ジ ン ナ ラ
Therapon servus (Bloch)
（第三十四圖版 第二圖） ×¹/₂
D. X to XI, I, 10; A. III, 8; scales about 100.

體長は頭長の 3 倍、體高の 2 ²/₃ 倍あり。頭長は眼徑の 5 倍、吻長の 3 ¹/₅ 倍なり。體は長橢圓形にして側扁す。上部外廓は滑かならざれ共下部は緩曲す。頭は短く其の外廓は稍直線をなす。眼は中等大にして吻は短く尖る。口は前方にありて側裂を有し、上顎骨は鰓孔下に及び兩顎は略等長なり。前眼窩下縁は鋸齒状をなす。前鰓蓋骨は其の角に強き齒を有し、3 個の鋭き長齒を有す。下縁のものは鋸齒状をなして小なり。兩顎外側の齒は圓錐形にして多少犬齒状をなし、密生せず。内側の齒は絨毛状にして小なり。幼少なるものは鋤骨、口蓋骨に齒を有すれども成育せるものは多く脱落す。背鰭は深刻を有し第一棘は甚だ小なり。尾鰭は稍大に、鱗は小にして粗なる櫛状をなす。頬部には鱗密生す。體褐色にして 3 條の黒帶あり。背棘部には黒點ありて、初の 4 棘は先端黒色なり。尾鰭中央には縦縞ありて、其の上下に斜帶を有す。南日本に産する小魚なり。

シ マ イ サ キ
Therapon oxyrhynchus Temminck & Schlegel
（第三十四圖版 第三圖） ×¹/₂
D. XII, 10; A. III, 8; scales 72.

體長は頭長の 3 倍、體高の 3 ¹/₁₀ 倍なり。體は長橢圓形にして延長し、側扁す。頭は中等に長く其の外廓は急斜す。吻は稍長く尖る。口は水平なり。兩顎齒は絨毛状にして側方は 2 列なり。上顎齒は其の前方に 6 個の小犬齒あり。前眼窩の下縁は鋸齒状をなす。前鰓蓋骨角には強き齒を有し、鰓蓋には 2 個の扁平なる棘ありて、下方のもの長し。體は上部濃綠色にして、下部は銀色を呈し、4 條の黒褐色縦縞あり。背鰭には 1 乃至 2 條の暗色縞あり。尾鰭は暗色の斑紋を有す。體長 250 耗に達し、南日本の岩礁多き沿岸に産す。

スミツキハナダヒ
Selenanthias analis Tanaka
（第三十四圖版 第四圖） ×1
D. X, 17; A. III, 7; scales 32.

體長は頭長の 2 ¹/₅ 倍、體高の 2 ¹/₅ 倍にして、頭長は眼徑の 3 ¹/₅ 倍、吻長の 4 ¹/₅ 倍なり。體は長橢圓形にして側

扁す。頭は大にして側扁し、其の外廓は圓滑なり。前眼窩狭く、鋤鰓齒を有し、上顎骨は其の端に於て擴大し、鰓孔の後縁下に達せず。口は前方にありて傾斜し、側裂を有す。兩顎齒は絨毛状にして、側部外廓及び前部には小數の犬齒あり。鋤骨及口蓋に小齒あり。鱗は大にして櫛状、頭部には前眼窩、唇、前鰓蓋骨邊緣等を除く各部に鱗密生す。體は紅色。臀鰭の中間邊緣に暗色の隆起あり。中等大にして南日本に産す。

サ ク ラ ダ ヒ
Sacura margaritacea (Hilgendorf)
（第三十四圖版 第五圖） ×1
D. X, 17; A. III, 7; scales 35.

體長は頭長の 2 ²/₁₀ 倍、體高の 2 ³/₄ 倍にして、頭長は眼徑の 3 ¹/₂ 倍、吻長の 4 ³/₄ 倍なり。體は長橢圓形にして強く側扁し、上部外廓は頭部上方に於て上昇す。頭は短く稍強硬にして、側扁す。口は傾斜し、下顎は上顎より長し。上顎には絨毛齒帶ありて其の外側のものは大にして犬齒状をなし、下顎には 2 列の小齒あり。内側のものは大にして犬齒状をなす。背鰭は鰓孔の上方に始まり、第三棘は糸状をなし、第一軟背刺の稍後方に達す。軟背鰭の邊緣は略ぼ直線にして第三刺は糸状をなし、尾鰭中間上に延長す。第二臀棘は第三のものより長く強し。側線は前部に於て彎曲し。背鰭及び臀鰭の刺部には鱗鞘あり。體は黃紅色にして下部は白色を帶ぶ。側線孔は褐色にして、體側に不規則なる青白色の點あり。體長 150 耗に達し、南日本の淺き岩底及び砂底に産す。

ア カ ム ツ
Doederleinia berycoides (Hilgendorf)
（第三十四圖版 第六圖） ×¹/₂
D. VIII, I, 10; A. III, 8; scales 50.

體長は頭長の 2 ⁴/₅ 倍、體高の 3 ¹/₅ 倍あり。頭長は眼徑の 3 ¹/₅ 倍、吻長の 4 ¹/₂ 倍なり。體は稍延長側扁し其の上部外廓は一樣に彎曲す。頭部は短く眼は頗る大なり。吻は短く尖る。口は大にして前方にあり側裂を有す。上顎骨は眼の中間下に達し、下眼窩は甚だ狭く、下顎突出す。兩顎齒は帶狀に並列し外方のものは小なり。犬齒は前方のもの強く、後方なるに従ひ小なり。鋤骨及び口蓋に齒あり。舌には齒なし。前鰓蓋骨は稍大に、柔軟にして不明瞭なる放射突起あり。背鰭は深刻を有すれども分離せず。棘は寧ろ弱し。尾鰭は僅に大なり。鱗は稍大にして櫛状をなし、前眼窩は眼の下にあり、頬部及び下顎には鱗を有す。體は深紅色にして胸部は黑色を帶ぶ。一般に食用とさるれども漁獲多からず。

ア カ イ サ キ
Caprodon schlegeli (Günther)
（第三十四圖版 第七圖） ×¹/₂
D. X, 21; A. III, 8; scales 60.

體長は頭長の 3 ¹/₅ 倍、體高の 2 ⁴/₅ 倍なり。體は長橢圓形にして側扁し、背部は上昇す。下部は殆んど水平にして、頭部は短く、側扁す。口は大にして傾斜し、上顎骨は眼の中央下に達し、下顎は上顎より長し。兩顎の前方には 1 對の犬齒あり。鋤骨、口蓋骨、及び翼狀骨には絨毛齒あり。前鰓蓋骨の後部及び下部は鋸齒状をなす。體は上部黃紅色にして、下部白色なり。背鰭には黒色縁あり。頭部及體側には、不規則なる黃色の斑紋あり。體長 400 耗に達し南日本の岩底に棲息す。

Parapristipoma trilineatum (Thunberg)
“Isaki”
PL. XXXIV, fig. 1. ×¹/₂

D. XIV, 17; A. III, 8; scales 115.
Length of body 3 ¹/₂ times that of head, and 3 ¹/₂ times depth of body. Length of head 4 times diameter of eye, and 3 times length of snout. Body elongated, rather slender, compressed. Dorsal profile more highly arched than ventral, that of head nearly straight. Snout short, rounded; mouth strongly oblique; lower jaw slightly produced. Maxillary extending under anterior border of eye. Teeth minute, present in jaws only. Pre-opercle with fine serrations. Opercular spines almost lacking; dorsal low and not divided; its spines flexible, and low. Body everywhere scaled except on lips; a patch of scales on outer portion of maxillary. Colour uniformly dark-olivaceous. In young, 3 narrow clear lines present. A shore fish of southern Japan. Ranked as excellent food fish, especially in Summer.

Therapon servus (Bloch)
“Zinnara”
PL. XXXIV, fig. 2. ×¹/₂

D. X to XI, I, 10; A. III, 8; scales about 100.
Length of body 3 times that of head, and 2 ²/₃ times depth of body. Length of head 5 times diameter of eye, and 3 ¹/₅ times length of snout. Body oblong, compressed; upper line of body angular, lower evenly curved. Back moderately elevated. Head short, with sub-straight profile; eye moderately large; snout short and pointed. Mouth terminal with lateral cleft. Maxillary extending to under pupil. Jaws sub-equal. Pre-orbitals coarsely serrated on lower margin, there are 3 larger and very acute teeth at the angle of the pre-opercle. Teeth in outer row of jaws conical, somewhat caninelike, not closely set, inner bands villiform and smaller in size; vomer and palatines toothed in young, but more or less deciduous in adults. Dorsals deeply notched, first spine very small; caudal somewhat deeply e-marginated. Scales small, roughly ctenoid. Cheeks closely scaled. Brownish body with 3 concentric black bands; a black blotch on spinous dorsal; first 4 soft rays tipped with black. Caudal with central longitudinal stripe, and an oblique band above and below. A small fish of southern Japan.

Therapon oxyrhynchus Temminck & Schlegel
“Sima-isaki”
PL. XXXIV, fig. 3. ×¹/₂

D. XII, 10; A. III, 8; scales 72.
Length of body equal to 3 times that of head, and to 3 ¹/₁₀ times depth of body. Body oblong elongated, compressed; head rather small but moderately long, with straight and steep profile; snout rather long, pointed when viewed from sides. Mouth sub-horizontal, lower jaw included; teeth in jaws villiform, in two rows laterally but anteriorly, in rather wide band; upper jaw has a rows of six rather small canines at anterior end; lower edge of pre-orbital serrated; pre-opercle rounded, with strong teeth at angle; opercle with two flattened spines, of which lower one is much larger; dorsal spines are heteracanthous that is alternating, the one stronger on the right side and the other on the left side. Colour of body deep-bluish above and silvery below, 4 blackish-brown broad longitudinal stripes alternating with 3 fainter ones; dorsal with one or two broad dark stripes; caudal with dark vermiculated patches. The fish attains to a length of 250 mm., and haunts rocky shores in southern Japan.

Selenanthias analis Tanaka
“Sumituki-hanadai”
PL. XXXIV, fig. 4. ×1

D. X, 17; A. III, 7; scales 32.
Length of body 2 ¹/₂ times that of head and 2 ¹/₃ times depth of body. Length of head 3 ¹/₅ times diameter of eye and 4 ¹/₅ times length of snout. Body oblong, rather robust, compressed. Head large, rather robust, compressed, with evenly

curved profile. Pre-orbital narrow, with crenulate edge; maxillary mostly exposed and expanded distally, not quite reaching to vertical through posterior edge of pupil. Mouth oblique, terminal, with lateral cleft. Villiform teeth in jaws; a few canines intercalated in places in outer-most row on sides and in anterior region. Small teeth on vomer and palatines. Scales large, ctenoid; head closely scaled except on pre-orbital, lips, narrow space along edge of pre-opercle and on branchiostegal membrane. Colour uniformly reddish. A dark ill-defined patch on margin of middle rays of anal. A handsome little fish of southern Japan.

Sacura margaritacea (Hilgendorf)
“Sakura-dai”
PL. XXXIV, fig. 5. ×1

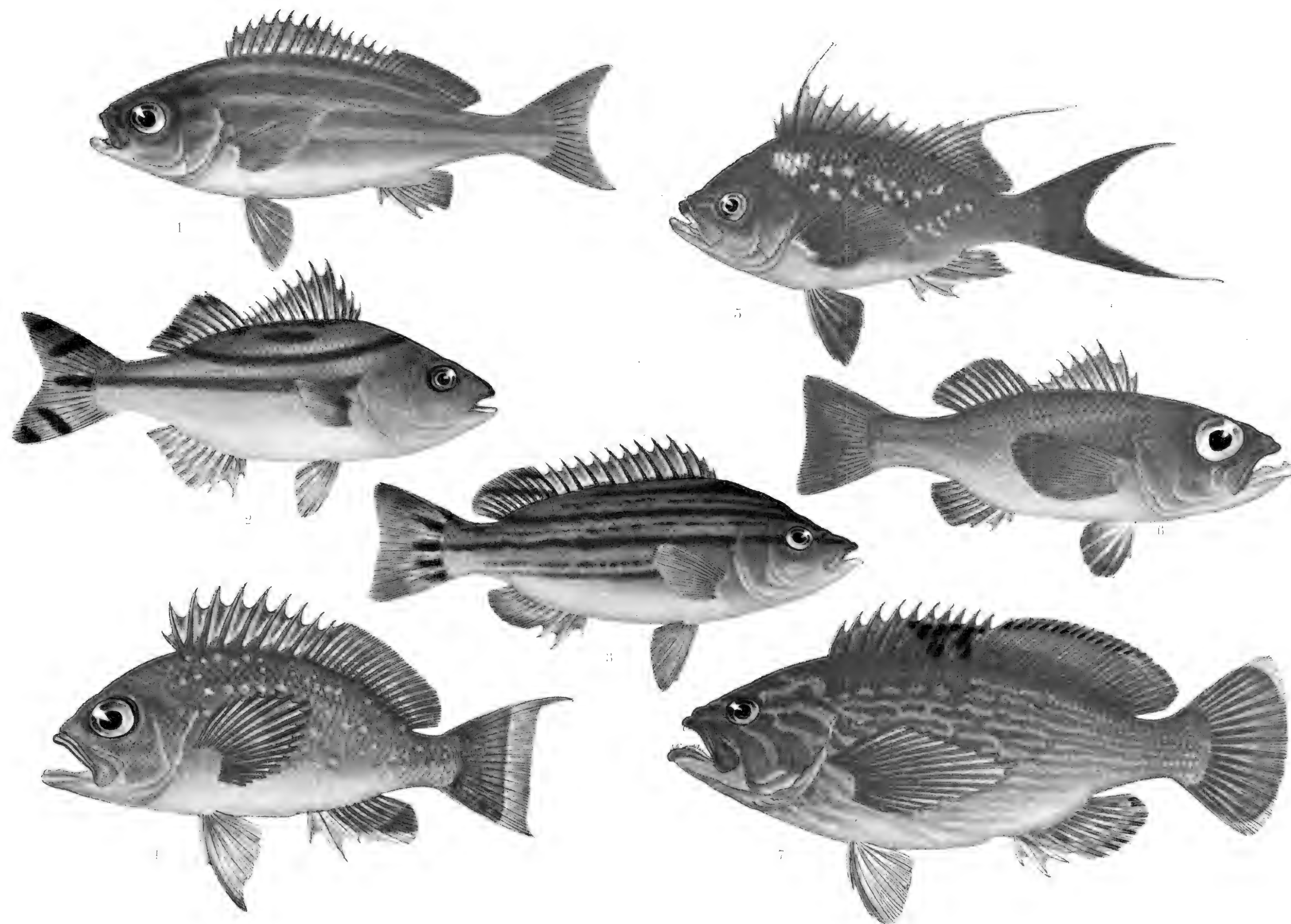
D. X, 17; A. III, 7; scales 35.
Length of body equal to 2 ²/₁₀ times that of head, and to 2 ³/₄ times of depth of body, length of head equal to 3 ¹/₂ diameter of eye, and to 4 ¹/₂ length of snout. Body oblong, strongly compressed, upper outline elevated at nape, head shortish, rather stout, and compressed; mouth oblique, lower jaw the longer; upper jaw with a narrow band of villiform teeth, outermost ones much larger, and canine-like, lower jaw with two rows of small teeth, those of inner row larger, canine-like, slender, and smaller than large ones of upper jaw. Dorsal originating above upper end of gill-opening; third spine of fin decidedly filamentous, extending a little beyond first soft ray; soft dorsal with almost straight border, third ray filamentous, extending slightly beyond tip of middle caudal rays; second spine of anal longer and stouter than third. Lateral line strongly arched anteriorly. Soft parts of dorsal and anal have a scaly sheath. Body light yellowish-red, whitish beneath; pores of lateral line more or less brownish; there are irregular pale iridescent spots on each side. A small fish, measuring about 150 mm. in length; haunts shallow rocky or sandy bottoms of southern Japan.

Doderleinia berycoides (Hilgendorf)
“Akamutu”
PL. XXXIV, fig. 6. ×¹/₂

D. VIII, I, 10; A. III, 8; scales 50.
Length of body 2 ¹/₅ times that of head, and 3 ¹/₅ times depth of body. Length of head 3 ¹/₃ times diameter of eye, and 4 ¹/₂ times length of snout. Body rather elongated and compressed, its upper outline evenly and broadly curved. Head short, eye very large, snout short, pointed. Mouth large, terminal, with lateral cleft; maxillary extending to below middle of eye. Sub-orbital very narrow, lower jaw produced. Teeth in jaws in bands, outer ones small; outward projecting, stout canines anteriorly, becoming gradually smaller posteriorly; vomer and palatines toothed, tongue toothless. Pre-opercle with rather widely set, flexible, indistinct radiating point. Scales rather large, finely ctenoid. Pre-orbital below eyes, maxillary, cheeks and mandible scaled. Colour bright crimson; mouth cavity, especially thoracical portion, blackish. This fish is esteemed as food.

Caprodon schlegeli (Günther)
“Aka-isagi”
PL. XXXIV, fig. 7. ×¹/₂

D. X, 21; A. III, 8; scales 60.
Length of body equal to 3 ¹/₅ times that of head, and to 2 ⁴/₅ times depth of body. Body oblong, much compressed; back elevated and arched; belly almost horizontal; head shortish, compressed, almost straight but steep in profile. Mouth large, oblique; maxillary extending to near centre of eye, its distal extremity very broadly rounded; lower jaw longer. Each jaw has a pair of canines anteriorly, villiform teeth on vomer, palatines and mesopterygoid. Pre-opercle rounded, with small, sharp, evenly placed serratures behind and below; opercle with three spines, middle one most conspicuous and extending farther back than the others. Colour of body yellowish-red above, whitish below, two black patches and black margin on dorsal fin; an irregular patch of light yellow on head and sides. The fish measures about 400 mm. in length, haunting rocky bottoms of southern Japan; not occurring very abundantly.





[illegible]

1. *Amelanchier canadensis* (Mill.) B.S.P.

[illegible]

2. $\{ \langle \mathbf{r}_i, \mathbf{r}_j \rangle \mid \mathbf{r}_i, \mathbf{r}_j \in \mathbf{R}^n, i, j = 1, \dots, n \}$ is a set of n^2 elements, and

3. $\{ \langle \mathbf{r}_i, \mathbf{r}_j \rangle \mid \mathbf{r}_i, \mathbf{r}_j \in \mathbf{R}^n, i, j = 1, \dots, n \}$ is a set of n^2 elements.

ヒゲダイ
 Hapalogenys nigripinnis (Temminck & Schlegel)
 （第三十五圖版 第一圖） × ¹ / ₂
D. XI, 15; A. III, 9; scales 65.
 體長は頭長の2 ⅜ 倍、體高の2倍にして頭長は眼徑の5 ½ 倍、吻長の2 ⅓ 倍なり。體高甚だ高く背部は大いに上昇す。背部外廓は背棘に向ひて直線をなし、吻は鈍圓なり。口は大にして水平、兩顎は等長にして上顎骨は眼の前半下に達す。唇は稍肥大して乳頭狀をなし、下顎は特に然り。前鰓蓋骨角は後方に向ひ其の邊緣は鋸齒狀をなす。鰓蓋には2個の扁平なる棘を有す。齒は兩顎のみに存し小なり。背鰭は深刻をなし、背棘の外縁は圓く、尾鰭も亦圓し。鱗は稍大にして粗櫛狀をなす。體は暗褐色にして數條の幅廣き斜帶あり。南日本に産すれども多からず。
コショウダイ
 Plectorhynchus cinctus (Temminck & Schlegel)
 （第三十五圖版 第二圖） × ¹ / ₂
D. XII, 15; A. III, 7; scales 94.
 體長は頭長の3倍、體高の2 ¼ 倍にして、頭長は眼徑の5倍、吻長の2 ½ 倍なり。體高及び頸部高くして吻より背鰭起部に亘り彎曲す。口は下位にして前方にあり。兩顎は等長にして上顎骨は眼縁の前部に達す。前鰓蓋骨邊緣は鋸齒狀をなし、鰓蓋には2個の小突起あり。兩顎齒は小にして圓錐形をなし、鋤骨及び口蓋骨には齒なし。背鰭は深刻をなし、第四棘最長なり。第二臀棘は長く尾鰭は稍鎌狀をなす。鱗は小にして櫛狀なり。體色灰褐にして頸部より臀鰭に亘りて黑色の曲帶あり。第三背棘より第七棘にも黑色帶あり。背部外廓より第二色帶下縁の間には多數の斑點あり。背鰭及び尾鰭にも亦點あり。體長500 耗に達し、漁獲多からず。
イトヨリ
 Euthyopteroma virgatum (Houttuyn)
 （第三十五圖版 第三圖） × ² / ₃
D. X, 9; A. III, 8; scales 50.
 體長は頭長の3 ½ 倍、體高の3 ⅓ 倍にして頭長は眼徑の5倍、吻長の3 ⅔ 倍なり。體は稍延長し、僅に側扁す。上部外廓は緩曲し、背部上昇せず。頭は小にして尖る。眼は稍小、吻は僅かに長くして尖り、口は稍傾斜し、兩顎は略ぼ等長なり。兩顎齒は絨毛狀にして上顎には3對の細長なる犬齒あり。鋤骨、口蓋骨及び舌には齒なし。前鰓蓋骨邊緣には纖毛を有す。鰓蓋は短く鈍き棘あり。背棘は細長にして弱く、長さ稍等しく尾鰭は叉狀をなし上葉の第二軟條は長く糸狀をなす。鱗は中等大にして櫛狀、南日本に産す。
タカサコ
 Caesio chrysozona (Kuhl & Van Hasselt)
 （第三十五圖版 第四圖） × ¹ / ₃
D. X, 15; A. III, 12; scales 65.
 體長は頭長の4倍、體高の5倍にして、頭長は眼徑及

び吻長の4倍なり。體は延長し、紡錘狀にして側扁す。背部は緩曲して上昇せず。頭は小にして尖り、其の外廓は稍直線なり。眼は比較的大に、頭部の前半にあり。吻は短く尖る。口は前方にあり、兩顎は稍等長にして、上顎骨は眼の前縁下に達す。齒は弱小なり。口蓋及び舌には齒なし。背鰭は稍低く前方に於て高く、棘は寧ろ弱し。尾鰭は深叉狀をなす。鱗は中等大にして櫛狀なり。體色青緑にして下部は淡く、眼の後縁より尾鰭基底にわたり黄色の側綫あり。又同様なる狹綫、背鰭基底に存す。尾鰭は淡紅にして外縁黑色なり。熱帯産にして本邦南部迄分布す。

メジナ
 Girela punctata Gray
 （第三十五圖版 第五圖） × ² / ₃
D. XV, 13; A. III, 12; scales 55.
 體長は頭長の3 ⅔ 倍、體高の2 ⅔ 倍にして、頭長は眼徑の4倍、吻長の3倍なり。體は長橢圓形にして外廓は凸形をなす。頭は短く其の外廓は急なり。眼は小に、吻は中等に長し。口は前にありて斜傾し、前鰓蓋骨の後縁は鋸齒狀をなす。兩顎には1列の3尖頭齒ありて、鋤骨、舌には齒なし。背鰭は短棘を有し、尾鰭は深く凹形をなす。鱗は粗き櫛狀をなし。胸鰭、腹鰭及び臀鰭の基部には鱗あり。頬部は鱗を有すれども鰓蓋には無し。體は暗紫色にして胸鰭基部には黒點あり、沿岸性魚にして體長300 耗に達し、肉は軟く、美味ならず。

ヘダイ
 Sparus aries (Temminck & Schlegel)
 （第三十五圖版 第六圖） × ¹ / ₂
D. XI to XII, 13; A. III, 11; scales 60,
 體長は頭長の3 ⅓ 倍、體高の2 ⅓ 倍にして、頭長は眼徑の4 ½ 倍、吻長の2 ⅔ 倍なり。體は卵圓形にして側扁し、背部は強く凸形をなす。頭は短く、先端鈍し。眼は小にして吻は稍長し。前眼窩は眼よりも廣く前鰓蓋骨邊緣は完全なり。上顎に4列、下顎に3列の白齒あり。兩顎に又3個の門齒を有す。背棘は尖銳にして第三及び第四棘は長し。胸鰭は長く臀鰭に達し、尾鰭は凹形をなす。鱗は中等大にして櫛狀をなす。體は銀色にして赤黄色の縦綫を有す。沿岸性魚にして、南日本に産す。

クチビダイ
 Lethrinus choerorhynchus (Bloch & Schneider)
 （第三十五圖版 第七圖） × ¹ / ₂
D. X, 9; A. III, 8; scales 48.
 體長は頭長の3倍、體高の2 ⅓ 倍にして、頭長は眼徑及び吻長の3倍なり。兩顎齒前方は多列にして、側方及び後方は1列なり。兩顎の前部には2個の彎曲せる犬齒ありて、側方、前方は圓錐形、又は鈍角にして、後部のものは白齒なり。背棘は稍強く、中央の1棘は最長なり。尾鰭は中等に凹形をなし、體は青色にして下部淡く、唇は淡紅にして口縁は朱色なり。南日本に産す。

Hapalogenys nigripinnis (Temminck & Schlegel)
 “Higedai”
 PL. XXXV, fig. 1. × ¹ / ₂
 D. XI, 15; A. III, 9; scales 65.
 Length of body 2 ¾ times that of head, and twice depth of body. Length of head 5 ½ times diameter of eye, and 2 ⅓ times length of snout. Body very deep, with much elevated back. Dorsal profile straight to recumbent spine of dorsal. Snout blunt, rounded. Mouth large, horizontal; jaws equal; maxillary extending to under anterior half of eye. Lips somewhat fleshy, papillose, lower jaw more distinctly so. Pre-opercular angle produced backwards, its margin finely serrated. Opercle with 2 small flat spines. Teeth in jaws only, minute. Dorsal deeply notched, spinous dorsal outline rounded; caudal rounded. Scales rather large, roughly ctenoid. Dark-brown, body with several oblique broad bands which are interrupted in places. Rather a rare fish of southern Japan.
Plectorhynchus cinctus (Temminck & Schlegel)
 “Kosyodai”
 PL. XXXV, fig. 2. × ¹ / ₂
 D. XII, 15; A. III, 7; scales 94.
 Length of body 3 times that of head, and 2 ¼ times depth of body. Length of head 5 times diameter of eye, and 2 ½ times length of snout. Body deep, nuchal region high, arched from snout to insertion of dorsal, and less so from insertion to base of caudal. Mouth low; terminal with lateral cleft. Jaws equal, maxillary extending to below anterior margin of eye. Pre-opercle finely serrated on margin; opercles with 2 obscure points. Teeth in jaws minute, conical; no tooth on vomer and palatines. Dorsals deeply notched, fourth spine longest. Second anal spine longest and of equal strength with third. Caudal sub-truncate. Scales rather small, ctenoid. Greyish-brown; a curved dark band extending from the nuchal region, just behind pectoral to anal fin; another band from third to seventh spines of dorsal; and a third along base of soft dorsal. Numerous spots distributed through the region between line of back and lower edge of second band. Dorsal and caudal fins spotted. Moderately large fish.

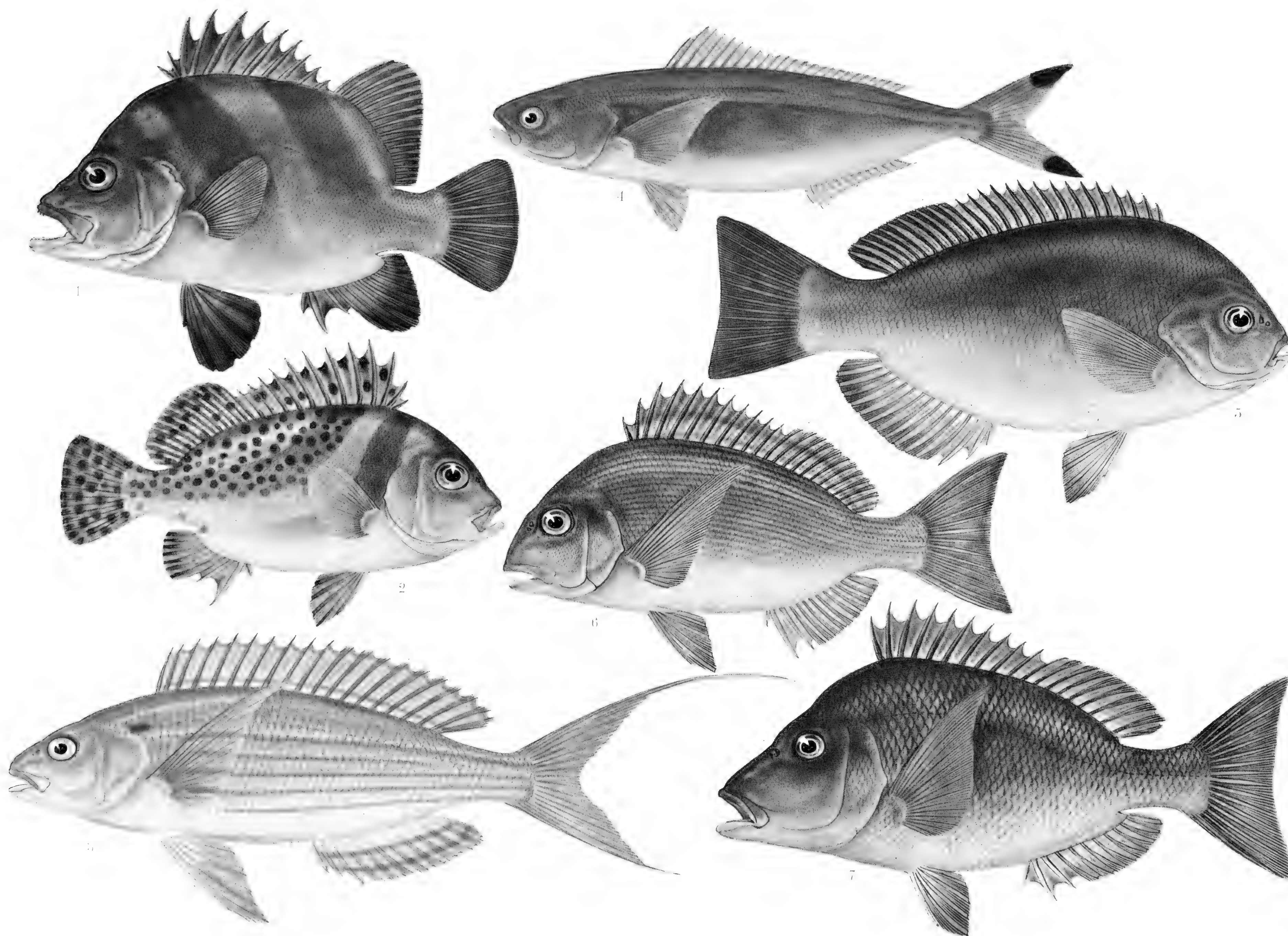
Euthyopteroma virgatum (Houttuyn)
 “Itoyori”
 PL. XXXV, fig. 3. × ² / ₃
 D. X, 9; A. III, 8; scales 50.
 Length of body 3 ½ times that of head, and 3 ⅓ times depth of body. Length of head 5 times diameter of eye, and 3 ⅔ times length of snout. Body somewhat elongated, and slightly compressed. Upper outline evenly and broadly curved, back not elevated. Head smallish, pointed. Eye rather small, snout somewhat long and pointed. Mouth slightly oblique; jaws subequal. Teeth in jaws villiform; besides, upper jaw has 3 pairs of slender canines near median tip; no teeth on vomer, palatines, or tongue. Pre-opercle with a ciliated edge; opercle with a short, blunt spine. Dorsal spines slender, flexible, and sub-equal in length; caudal forked, second developed ray of upper lobe with a long filament. Scales moderately large, ctenoid. One of the choicest fish of southern Japan.

Caesio chrysozona (Kuhl & Van Hasselt)
 “Takasago”
 PL. XXXV, fig. 4. × ¹ / ₃
 D. X, 15; A. III, 12; scales 65.
 Length of body 4 times that of head, and 5 times depth of body. Length of head 4 times diameter of eye, or length of snout. Teeth in jaws in many series in front, laterally and posteriorly in one row; two curved canines in front of both jaws; lateral series anteriorly conical, acute or obtuse, posteriorly rounded molars. Dorsal spines moderately stiff, middle ones longest. Caudal moderately emarginated. Colour of body olivaceous, lighter below. Lips pinkish, lining of mouth-cavity vermilion. A fish of southern Japan.

times depth of body. Length of head 4 times diameter of eye, or length of snout. Body elongated, fusiform and slightly compressed; back evenly and broadly curved, not elevated. Head smallish, pointed, with sub-straight profile; eye rather large, in anterior half of head; snout shortish, pointed. Mouth terminal, with lateral cleft; jaws sub-equal; maxillary extending to beneath anterior border of eye. Teeth minute, feeble; none on palate or on tongue. Dorsal rather low, highest anteriorly, its spines rather feeble. Caudal deeply forked. Scales moderately large, ctenoid. Colour of body greenish-blue, much lighter below; a broad yellow lateral stripe extending from posterior border of eye to base of caudal; another similar but narrower band along base of dorsal fin. Caudal pinkish, broadly tipped blackish. A tropical fish, extending in distribution to warmer parts of southern Japan.

Girella punctata Gray
 “Mezina”
 PL. XXXV, fig. 5. × ¹ / ₂
 D. XV, 13; A. III, 12; scales 55.
 Length of body 3 ⅔ times that of head, and 2 ⅔ times depth of body. Length of head 4 times diameter of eye and 3 times length of snout. Body oblong, with strongly convex outline. Head shortish, with steep profile; eye smallish, snout moderately long. Mouth terminal, oblique, with lateral cleft. Pre-opercle finely serrated on posterior limb, only partially on lower. A single series of tricuspid teeth in both jaws, backed by a band of much smaller ones. No teeth on vomer or on tongue. Dorsal with shortish spines; caudal deeply emarginated. Scales roughly ctenoid, vertical fins closely scaled at base. Cheeks scaled but opercle mostly scaleless. Dark purplish; a dark patch at base of pectoral. A shore fish, attaining to a length of 300 mm. Its flesh is soft and the flavour not very good.
Sparus aries (Temminck & Schlegel)
 “Hedai”
 PL. XXXV, fig. 6. × ¹ / ₂
 D. XI to XII, 13; A. III, 11; scales 60.
 Length of body 3 ⅓ times that of head and 2 ⅙ times depth of body. Length of head 4 ½ times diameter of eye, and 2 ⅔ times length of snout. Body ovate, compressed, back strongly convex. Head shortish, stout, with blunt tip; eye smallish, snout rather long. Pre-orbital broader than eye. Pre-opercular margin entire. Upper jaw with 4 rows of molars and the lower with 3 rows of similar teeth. Three incisor teeth on either side of both jaws in front. Dorsal spines pungent, third and fourth being longest. Pectoral long, reaching anal. Caudal emarginated. Scales moderately large, cycloid. Colour of body silvery, with brassy-yellow lateral stripes. A shore fish of southern Japan.

Lethrinus choerorhynchus (Bloch & Schneider)
 “Kutibidai”
 PL. XXXV, fig. 7. × ¹ / ₂
 D. X, 9; A. III, 8; scales 48.
 Length of body 3 times that of head, and 2 ⅓ times depth of body. Length of head 3 times diameter of eye, or length of snout. Teeth in jaws in many series in front, laterally and posteriorly in one row; two curved canines in front of both jaws; lateral series anteriorly conical, acute or obtuse, posteriorly rounded molars. Dorsal spines moderately stiff, middle ones longest. Caudal moderately emarginated. Colour of body olivaceous, lighter below. Lips pinkish, lining of mouth-cavity vermilion. A fish of southern Japan.



1351

1. The first part of the report is a general introduction to the project. It describes the purpose of the study and the objectives that were set at the beginning.

2. The second part of the report is a detailed description of the methodology used in the study. It includes information about the data collection methods and the statistical analysis techniques.

3. The third part of the report is a presentation of the results of the study. It includes a summary of the findings and a discussion of their implications. The results are presented in a clear and concise manner, using tables and graphs where appropriate.

4. The fourth part of the report is a conclusion and a list of references. The conclusion summarizes the main findings of the study and provides a final statement on the project. The references list the sources of information used in the study.

5. The fifth part of the report is a list of appendices. These include any additional information that is relevant to the study but is not included in the main body of the report. Examples of appendices include raw data, detailed calculations, and additional figures.

6. The sixth part of the report is a list of acknowledgments. This section is used to thank the people and organizations that have provided support and assistance during the course of the study.

7. The seventh part of the report is a list of references. This section is used to cite the sources of information used in the study. It is important to provide accurate references to ensure the credibility of the research.

8. The eighth part of the report is a list of appendices. These include any additional information that is relevant to the study but is not included in the main body of the report. Examples of appendices include raw data, detailed calculations, and additional figures.

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21. The twenty-first part of the report is a list of appendices. These include any additional information that is relevant to the study but is not included in the main body of the report. Examples of appendices include raw data, detailed calculations, and additional figures.

マ ダ ヒ
Pagrosomus major (Temminck & Schlegel)
タヒ、オホダヒ、ホシダヒ（關西）
（第三十六圖版 第一圖） × 1⁄2
D. XII, 10; A. III, 8; scales 57.

體長は頭長の31⁄6倍、體高の23⁄6倍、頭長は眼徑の51⁄6倍に相當す。體は細長く側扁し、背鰭の直前に於て最高し、各顎には千歯及粒狀齒あり、上顎の前方に四個の犬齒ありて下顎の同處には六個の大齒あり。體は美しい紅色にして、尾鰭の後縁は狭き黑色帶をなす。又體側に綠色の圓點あるも成長と共に消失す。本種は食用魚中最も重要なるものにして産額多し。本州以省我國の到る所に産し、殊に瀬戸内海は有名なる産地なり。

チ ダ ヒ
Evynnis cardinalis (Lacépède)
チコダヒ（高知、エビスダヒの項參照）、
ハナオレダヒ（雄、九州）
（第三十六圖版 第二圖） × 1⁄2
D. XII, 10; A. III, 9; scales 58.

體長は頭長の31⁄4倍、體高の21⁄6倍、頭長は眼徑の42⁄7倍なり。體は稍細長く、體高稍や高く、側扁す。頭部は緩なる曲線の背外廓を有す。各顎には犬齒、臼齒及粒狀齒を具へ、犬齒は上顎の先端に四個、下顎に六個あり。背鰭の棘は稍弱くして屈曲し易く、第三、第四棘は僅に絲狀を呈す。體は紅色にして、體側に綠色の圓點を散在す。價格は一般にマダヒよりも僅に廉なり。

エ ビ ス ダ ヒ
Evynnis edita (Tanaka)
チコダヒ（東京、チダヒの項參照）、
エビスダヒ（關西）
（第三十六圖版 第三圖） × 1⁄2
D. XII, 10; A. III, 8; scales 59.

體長は頭長の31⁄6倍、體高の2倍より僅に小く、頭長は眼徑の32⁄6なり。體は卵形にして側扁し背部は大に昂起せり。背鰭は曲け易く第三及第四棘頗る長く、絲狀を

呈す。兩顎の齒列は前種と同様なり。本種は支那東海に於て漁獲せらる。體は紅色にして綠色の圓點は連續して列をなせり、味はチダヒと異ならず。

キ ダ ヒ
Taius tumifrons (Temminck & Schlegel)
レンコダヒ（關西）
（第三十六圖版 第四圖） × 1⁄2
D. XII, 10; A. III, 8; scales 46.

體長は頭長の24⁄7倍、體高の21⁄6倍、頭長は眼徑の4倍なり。體高稍高く、側扁し、體高の高き部分は腹鰭基部を通じて引ける垂線上にあり、頭部の上外廓は前方に於て強き凹形を呈し後鼻孔の上方に於て昂起す。尚眼上に於て強き凸形を現はせり。兩顎には圓錐齒、犬齒及粒狀齒を有し、臼齒は之を缺く、前端に近き處に於て上顎には四個の犬齒を又下顎には六個の犬齒を有す。背鰭の棘は稍短く、強固にして絲狀をなさず。體色は赤きも著しく黄色を加ふ、味は上記の三種のタヒに劣る。本種は稍深海に産し、支那東海に多し。瀬戸内海には之を産せず。

ク ロ ダ ヒ
Sparus macrocephalus (Basilewsky)
チヌ（關西）、チン（九州）、カイヅ（幼形）
（第三十六圖版 第五圖） × 1⁄2
D. XI, 11; A. III, 8; scales 53.

體長は頭長の31⁄4倍、體高の22⁄6倍、頭長は眼徑の51⁄6倍なり。體は細長く側扁し、前方の背外廓は大に曲れり。上顎は側方に於て五列の臼齒を具へ下顎には三列の臼齒あり、兩顎の何れもその前方には六個の尖れる齒あり、鰓は黒紫色、沿岸魚なり。夏美味にして北日本には少し。五月、六月の候産卵す。

Pagrosomus major (Temminck & Schlegel)
“ Tai ”
PL. XXXVI, fig. 1. × 1⁄2
D. XII, 10; A. III, 8; scales 57.

Length of body equal to 31⁄6 times that of head and 23⁄6 times of height; length of head 51⁄6 times that of eye. Body oblong in shape, and compressed, deepest point being at the origin of dorsal fin. Each jaw furnished with molars and granular teeth; at anterior tip there are four canines in upper jaw, and six in lower. Body bright red in colour, usually with bright green spots which are however lacking in largest specimens. Caudal fin has a narrow edge of black towards the back. It is an indispensable fish in the menu at congratulatory or complimentary banquets and ceremonies, being delicious in taste all the year round.

Evynnis cardinalis (Lacépède)
“ Tidaï ”
PL. XXXVI, fig. 2. × 1⁄2
D. XII, 10; A. III, 9; scales 58.

Length of body equal to 31⁄4 times that of head and 21⁄3 times of height; length of head 42⁄7 times that of eye. Body oblong in shape, rather deep and compressed. Head has a very gently and evenly curved profile. Each jaw furnished with canines, molars and granular teeth; at anterior tip there are four large canines in upper jaw and six in lower. Dorsal spines are rather slender, and somewhat flexible, the third and fourth spines being slightly filamentous. Body red, and bright green spots sparsely and irregularly scattered over it. The fish is used as a substitute for the above mentioned fish at banquets and ceremonies, being delicious in taste all the year round.

Evyanis edita (Tanaka)
“ Ehisudai ”
PL. XXXVI, fig. 3. × 1⁄2
D. XII, 10; A. III, 8; scales 59.

Length of body equal to 31⁄4 times that of head and a trifle less than 2 times of height; length of head 32⁄3 times of eye. Body oval in shape and strongly compressed, with a greatly elevated back. Dorsal spines flexible and feeble, the third and fourth being very long and fila-

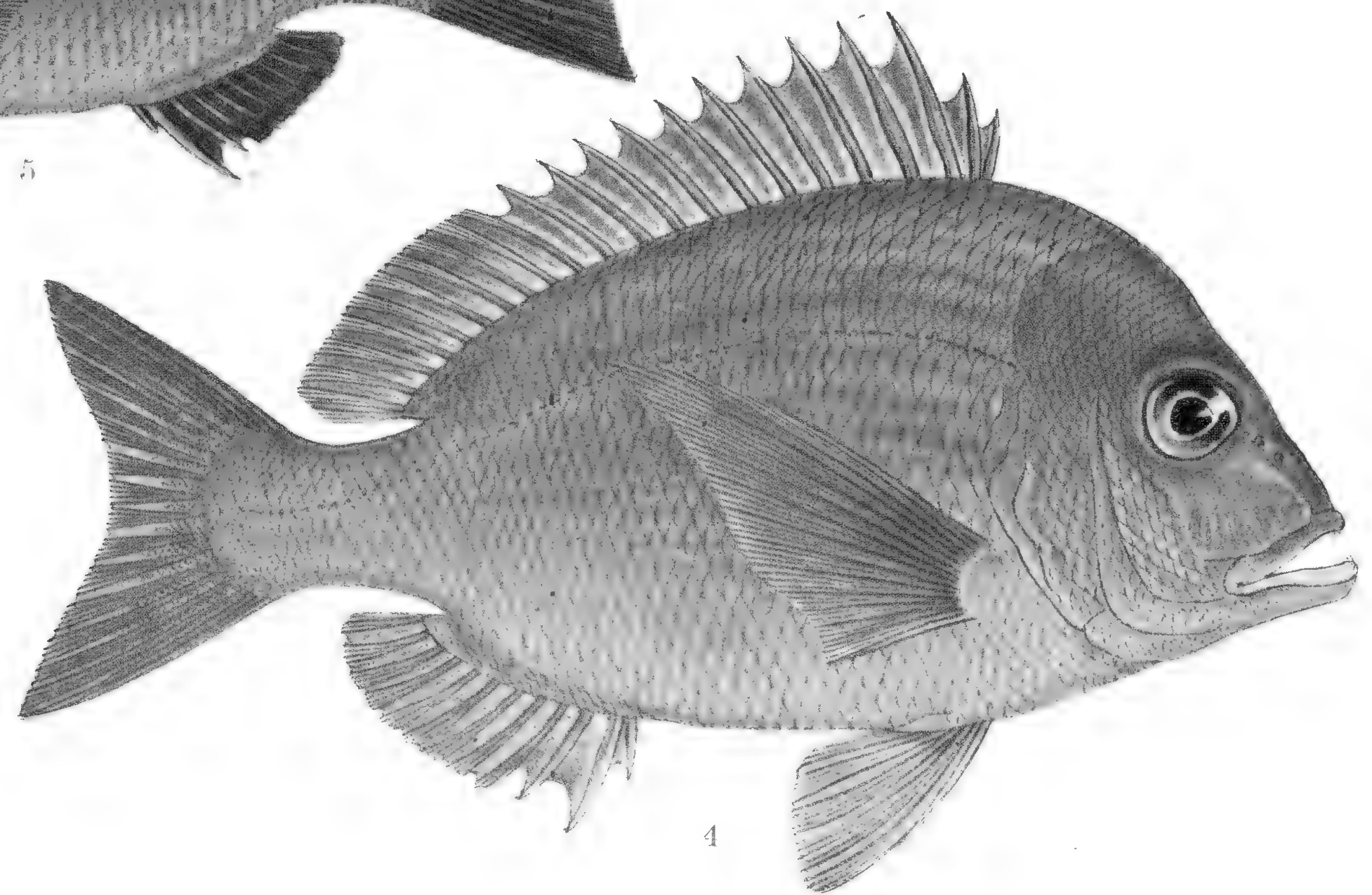
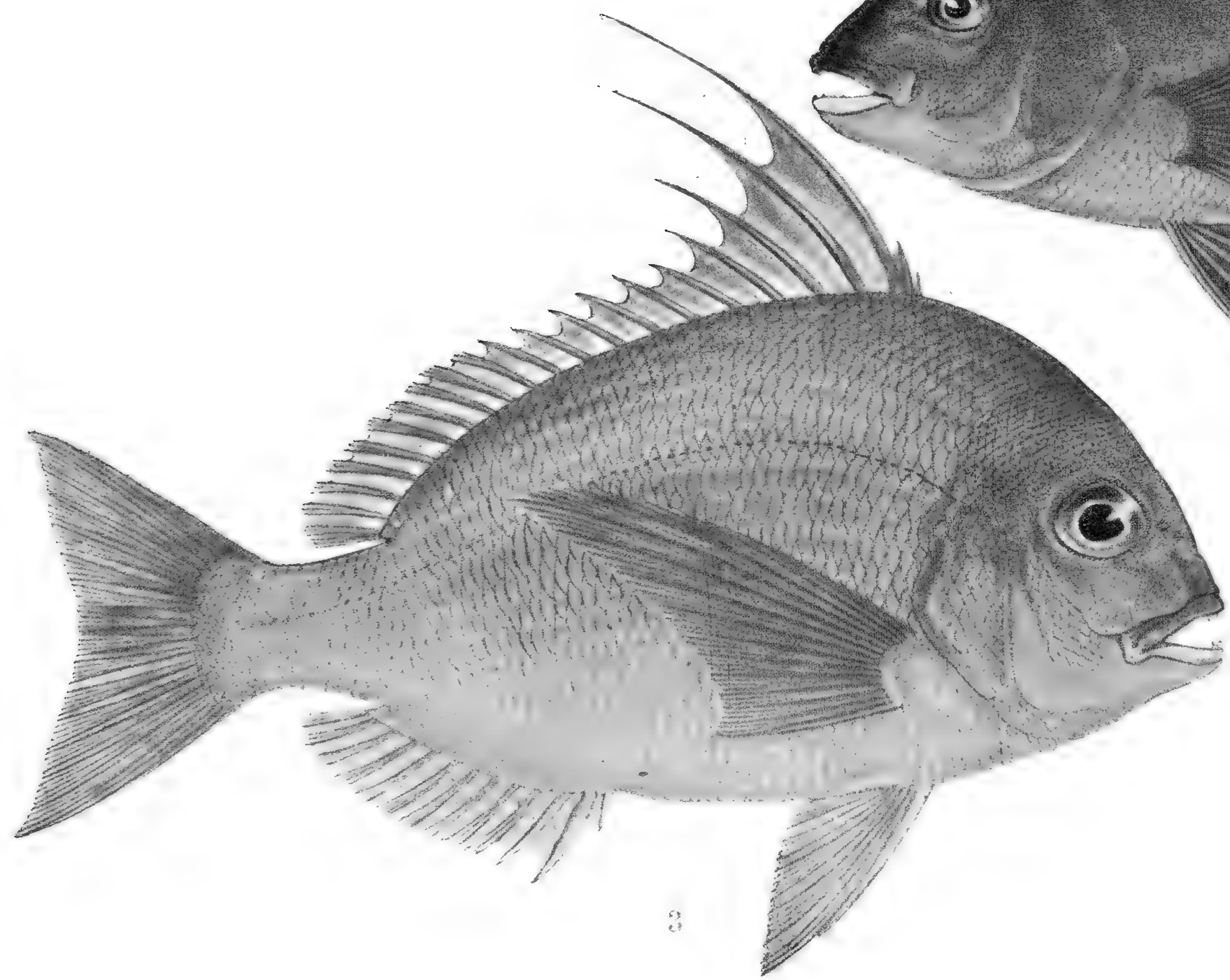
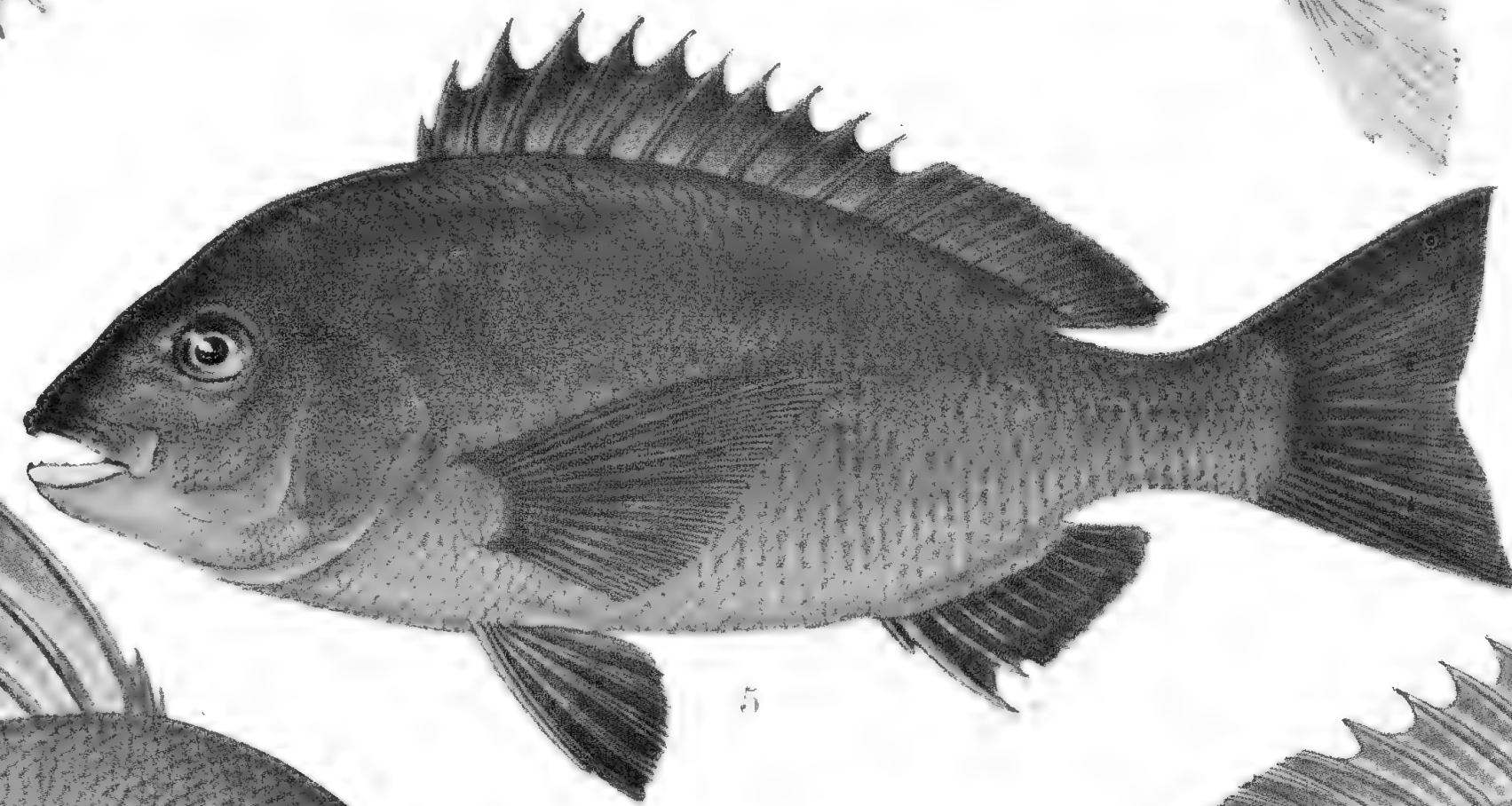
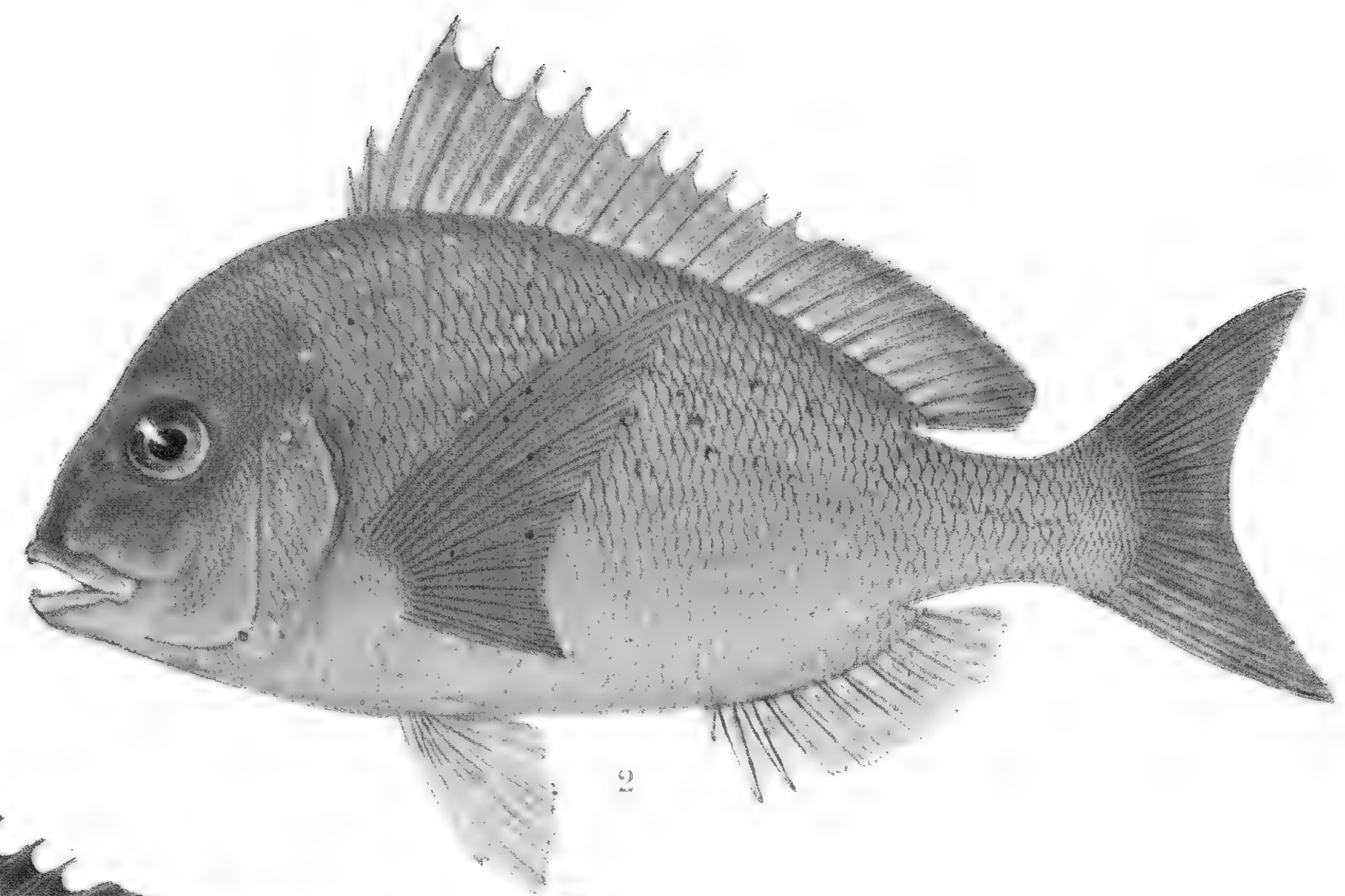
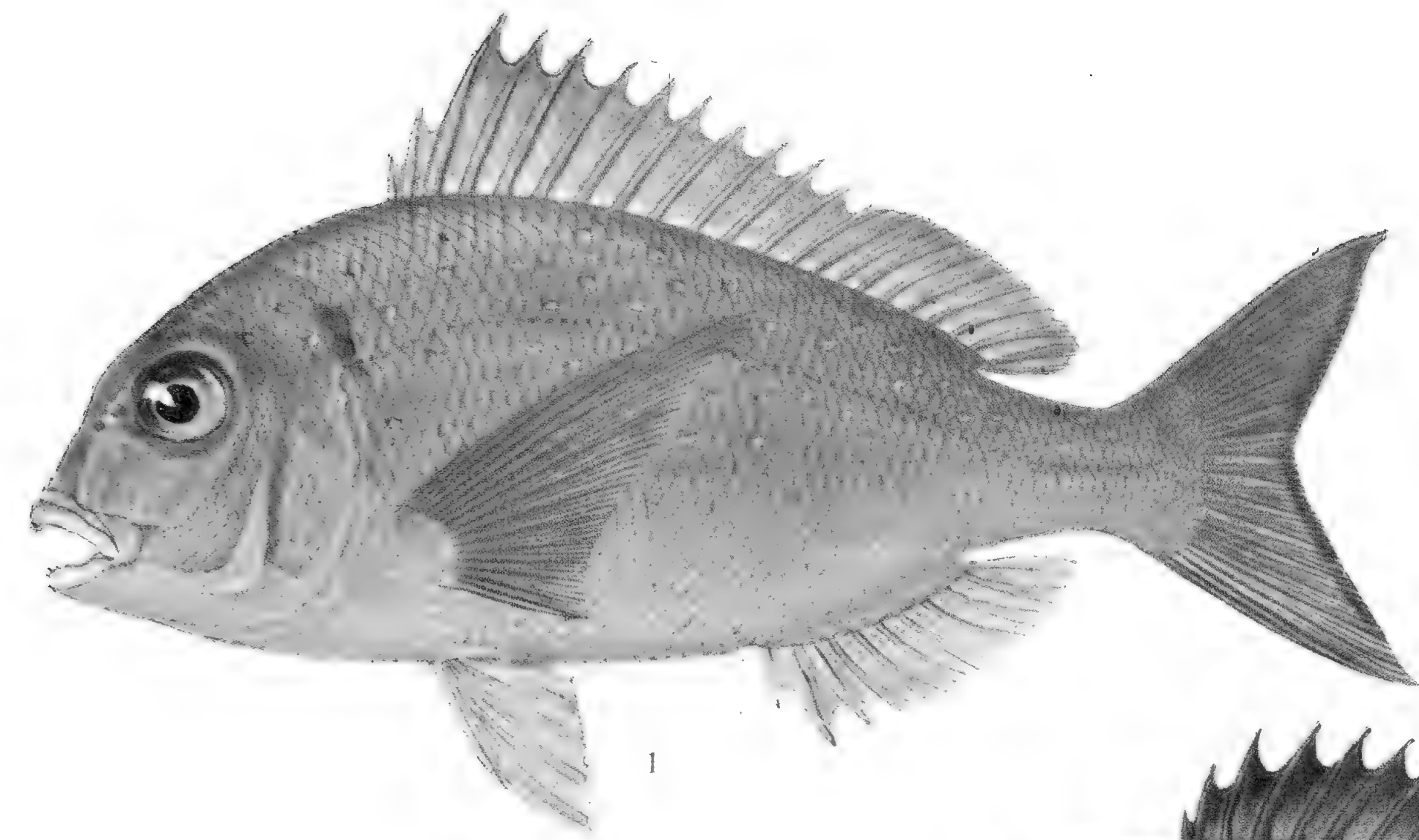
mentous. Dentition in jaws subimilar to that of the above mentioned species. Body red in colour, with green spots. It is delicious in taste all the year round.

Taius tumifrons (Temminck & Schlegel)
“ Kidaï ”
PL. XXXVI, fig. 4. × 1⁄2
D. XII, 10; A. III, 8; scales 46.

Length of body equal to 24⁄7 times that of head and 21⁄6 tims of height; length of head is 4 times that of eye. Body rather deep, and compressed, deepest portion being at insertion of ventral fin. Profile of head strongly concave anteriorly, elevated over the posterior nostril, and strongly convex over eye. Both jaws are furnished with conical teeth, canines and granular teeth, without any molars; at anterior tip there are four large canines in upper jaw, and six in lower. Spines of dorsal fin short, and rather stout, but not filamentous. Body yellowish red. Taste of flesh is a little inferior to that of the above three species.

Sparus macrocephalus (Basilewsky)
“ Kurodai ”
PL. XXXVI, fig. 5. × 1⁄2
D. XI, 11; A. III, 8; scales 53.

Length of body equal to 31⁄4 times that of head and 22⁄6 times of height; length of head 51⁄6 times that of eye. Body oblong in shape, and compressed, with a strongly arched anterior profile; upper jaw with five rows of molars laterally and lower with three rows of molars laterally; anteriorly each jaw furnished with six pointed teeth. Body blackish purple. It is a littoral fish, and delicious in summer.





ウミタナゴ

Ditrema temmincki Bleeker.

(第三十七圖版 第一圖) ×²/₃

D. X, 21; A. III, 26; scales 75.

體長は頭長の 3 1/2 倍，體高の 2 1/3 倍にして，頭長は吻長の 3 1/3 倍に相當す．體は卵形にして側扁し，口は小さく，下顎は上顎より僅かに短かし．齒は圓錐形にして鈍く，1 列に並べり．鰓耙の數少なく，短く細く，第一鰓弓の上枝に約 15 あり．頬には 5 列の鱗あり．雄に於ては臀鰭の第七軟條及續く數個の軟條は著しく延長すれども雌に於ては延長せず．尾鰭は深く二又せり．體色背部は鋼鐵色を帯びたる青色或は灰褐色にして，下方は淡く，前鰓蓋骨の下部には 2 黒點あり．又眼より主上顎骨に走る 2 條の黒線あり．鰓蓋骨の上端に 1 黒斑あり，體長 200 耗に達す．北海道より九州に分布す．胎生にして，胎兒は親の輸卵管中に生存する期間長く，従つて産出されたる胎兒は大きく約 30 耗ありて形も親魚と同様なり．1 産の胎兒數 30 尾前後なり．

キス

Sillago sihama (Forskål)

(第三十七圖版 第二圖) ×²/₃

D. XII, 24; A. 25; scales 75.

體長は頭長の 4 倍，體高の 5 1/2 倍なり．頭長は吻長の 2 1/3 倍，眼徑の 6 倍なり．體は延長し，前方は圓味を帯び後方側扁せり．頭部長く，上部及び下部外廓は一樣に甚だ緩かに曲がれり．吻の尖端は尖る．兩顎には絨毛狀齒を有し，狭き齒帶をなす．鋤骨には齒あるも口蓋骨になし．鰓蓋骨には 1 個の短き棘あり．背鰭は 2 基にして全く離れり．體色背部は帶黃綠色にして下方淡く，體側中央には綠褐色の縦線直走せり．本種は我國に於ては函館より長崎に分布す．此の外紅海，東印度諸島，及びヒリツピン諸島に及ぶ．沿岸魚にして，春季産卵す．甚だ美味なり．

イシモチ

Sciaena schlegeli (Bleeker)

(第三十七圖版 第三圖) ×1/2

D. XI, 25 to 27; A. II, 7 to 8; scales 50.

體長は頭長の 3 倍乃至 3 1/3 倍，體高の 3 倍乃至 3 1/3 倍なり．頭長は吻長の 3 1/3 倍，眼徑の 4 倍乃至 4 1/2 倍なり．體はニベに比し稍短く，又體高稍高し．體は側扁し背部及び腹部外廓は同様に彎曲せり．口は斜位にして下顎は上顎より僅かに短し．齒は兩顎共 2 列に並べり．前鰓蓋骨邊縁には甚だ弱き柔軟なる鋸齒あり．鰓蓋には 2 個の稍大にして扁平なる軟棘あり．臀鰭棘は弱く其の第二棘は眼徑に等し．背鰭軟條部に鱗無し．體は銀白色にして，背部は稍灰色を帯ぶ．鰓蓋骨は大にして明瞭なる 1 黒斑あり．又胸鰭腹部に 1 小黒點あり．南日本の淺海に多く，體長 400 耗に達す．五，六月の頃産卵し，日本にては一般の食料品として普通なるものなり．

ニベ

Sciaena mitsukurii (Jordan & Snyder)

(第三十七圖版 第四圖) ×1/3

D. X, 27 to 31; A. II, 7; scales 50.

體長は頭長の 3 1/3 倍，乃至 3 2/3 倍，體高の 3 2/3 倍なり．頭長は吻長の 3 1/2 倍乃至 4 倍，眼徑の 6 倍なり．體は長橢圓形にして，稍側扁し頭は圓錐形にして吻は鈍く尖り先端圓味を呈す．下顎は上顎より稍短し．上顎齒

は 2 列に並び外列齒は小さく圓錐形にして，内列齒は剛毛狀なり．下顎齒は 2 列にして内列齒は稍大なり．前鰓蓋骨には小なる弱き棘ありて，鰓蓋骨には軟かき 2 棘あり．背鰭棘は弱く第三乃至第四棘はも長し．臀鰭第二棘は甚だ強し．體は銀色にして背部は多少灰色を帯び．胸鰭基底軟條より上方の體側に於ける各鱗列には幅狭き暗色縱帶あり．全長 900 耗に達す．底棲魚にして冬期産卵す．我國東海岸及び支那に多産す．

アマダヒ

Branchiostegus japonicus (Houttuyn)

(第三十七圖版 第五圖) ×1/2

D. 21; A. 14; scales 70

體長は頭長の 3 2/3 倍，體高の 3 1/2 倍なり．頭長は眼徑の 4 倍，吻長の 2 1/3 倍なり．體は長く，側扁し，背外廓は吻長に於て頗る急峻にして，主上顎骨は一部眼前骨の下に隠れ瞳孔の中心より引ける垂線に達す．上顎には 2 組の齒あり．就中外列は 1 列の大なる齒より成り，内列は微小齒の狭き帶をなす．下顎の齒も亦大體上顎の齒と同様なり．鰓耙は中部に存するものは脊形にして，兩端に於ては頗る小くなれり．前鰓蓋骨の後縁は細かく鋸齒をなす．體は細かき櫛鱗を以て蔽はれ，側線は不明瞭なり．體は淡赤く，所々に他の諸色を交ひ．體長は 450 耗に達す．此魚は味ひ甚だ佳良にして高價に取りせらる．

マトウダヒ

Zeus japonicus Cuvier & Valenciennes.

(第三十七圖版 第六圖) ×1/2

D. X, 23; A. IV, 22; V. I, 7; scales 110.

體長は頭長の 2 1/3 倍，體高の 2 倍にして，頭長は吻長の約 2 倍，眼徑の 4 1/2 倍なり．體は卵圓形にして體高く，著しく側扁し，甚だ小なる圓鱗を以て蔽はる．背鰭軟條の基底に沿ひ各側に 7 個の棘板あれども背鰭棘の基底になし．同様の棘が臀鰭基底に 6 個と腹鰭と臀鰭との間に 1 列あり．各棘板は 1 對の棘を有す．口は稍大きく上顎は伸出せしむるを得．兩顎及び鋤骨に小齒あるも口蓋骨に無し．眼の後方及び上方に 2 突起あり．頭頂に 2 隆起線あり．背鰭棘は強く且延長して先端は糸狀を呈す．體は銀白色にして上方は淡灰褐色なり．體側中央には 1 大黒斑紋あり．體長 300 耗に達す．東京より九州に亘りて多産し，南日本の淺海に多し．

タカノハダヒ

Goniistius Zonatus (Cuvier & Valenciennes)

(第三十七圖版 第七圖) ×2/3

D. XVII, 32; A. III, 8; scales 60.

體長は頭長の 3 1/2 倍，體高の 3 倍にして頭長は吻長の 2 2/3 倍，眼徑の 4 1/4 倍なり．體は長橢圓形にして頂部大いに隆起せり．頭部は稍短く其の上下廓は稍急峻なり．口は小にして口唇肥厚す．兩顎齒は小さく尖り，狭き齒帶をなし外列齒は肥大せり．鋤骨及び口蓋骨に齒なし．前鰓蓋骨邊縁に鋸齒なく．鰓蓋骨には 2 個の不明瞭なる扁平棘あり．體は黃褐色にして下方淡く，9 條の幅廣き黃褐線は斜に體を横切り，體の下方に至るに従ひ次第に不明瞭となる．其の内第一條は眼を横切り最後の斜線は尾柄を横切れり．背鰭軟條の基底に暗色縱綫あり．尾鰭は暗褐色にして，凡そ 12 個の淡き圓點あり．尾鰭後縁は暗色を呈す．體長 250 耗に達す．南日本に多く，南は臺灣，北は東京附近に及べり．又南支那にも産す．

Ditrema temmincki (Bleeker)

“ Umitanago ”

PL. XXXVII, fig. 1. ×²/₃

D. X, 21; A. III, 26; scales 75.

Length of body equal to 3 1/2 times that of head, and 2 1/3 times depth of body; length of head equal to 3 1/3 times that of snout; body ovate and compressed. Mouth small; lower jaw slightly shorter than upper, conical and blunt, arranged in one series. Gill rakers few, short and slender, about 15 on the lower limb of arch. There are five rows of scales on the cheek. In the male the seventh and several following anal rays project, posterior rays graduated in length; but no projecting ones in female; caudal fin deeply forked. Body steel-blue or brownish-grey above, paler below; lower limb of pre-opercle with two black spots; two black bars running from eye to maxillary; there is a dark blotch on upper end of opercle. It attains a length of 200 mm.; found from Hokkaido to Kyushyu. Viviparous in habit, young remaining for a long time in the oviduct of the mother fish; they are relatively large, about 30 mm. in length at birth, and in shape similar to parents. A female brings forth about 30 young at a birth. Breeding season is from April to May.

Sillago sihama (Forskål)

“ Kisu ”

PL. XXXVII, fig. 2. ×²/₃

D. XII, 24; A. 25; scales 75.

Length of body equal to about 4 times that of head and to 5 1/2 times depth of body; length of head equal to 2 1/3 times that of snout and to about 6 times the diameter of eye. Body elongated, head long, with equally and very gently curved upper and lower profiles, snout pointed at tip. Teeth in jaws villiform, in a narrow band; vomer toothed but palatines toothless. Opercle with a short, pointed spire. Dorsals two, entirely separated. Colour of body yellowish-green above, paler beneath; a greenish-brown straight band along middle of side of body. Total length attains to 200 mm. The species is common from Hakodate to Nagasaki in Japan, but it also is found in Red Sea, East Indies and Philippines. It is a littoral fish, spawning in Spring; very delicious to taste as food.

Sciaena schlegeli (Bleeker)

“ Isimoti ”

PL. XXXVII, fig. 3. ×1/2

D. XI, 25 to 27; A. II, 7 to 8; scales 50.

Length of body equal to 3 to 3 1/3 times that of head, and to 3 to 3 1/3 times depth of body; length of head equal to 3 1/3 times that of snout, and to 4 to 4 2/3 times diameter of eye. Body rather short, somewhat deep and compressed, dorsal and ventral profiles similarly curved. Mouth oblique; lower jaw a little shorter than upper; teeth arranged in two rows in both jaws. Pre-opercular margin with very weak and flexible serrations; opercle with two rather large, flat, flexible spines. Anal spine weak, the second equal in length to diameter of eye; soft dorsal without scales. Body silvery, upper part slightly greyish; a large indistinct blackish blotch on opercle and smaller one on axil of pectoral. Very common in shallow bays of southern Japan. Attains a length of 400 mm. Spawns in May to June; rather a common food fish in Japan.

Sciaena mitsukurii (Jordan & Snyder)

“ Nibe ”

PL. XXXVII, fig. 4. ×1/3

D. X, 27 to 31; A. II, 7; scales 50.

Length of body equal to 3 1/3 to 3 2/3 times that of head, and to 3 2/3 times depth of body; length of head equal to 3 1/2 to 4 times that of snout, and to 6 times the diameter of eye. Body oblong and somewhat compressed; head conical and snout bluntly rounded; lower jaw slightly shorter than upper. Teeth of upper jaw arranged in two series,

of which outer ones are small and conical, while inner ones are bristly teeth in lower jaw also arranged in 2 series, inner ones being somewhat larger. Pre-opercle with small and weak spines; opercle with 2 soft spines. Dorsal spines not stout, third or fourth being longest; second anal spine very strong. Body silvery-grey above, lighter below; along each series of scales above level of lower pectoral ray a longitudinal narrow dark stripe runs. Total length attains 900 mm.. A bottom fish; spawns in Winter, being rather common on east coasts of Japan and China; not very good as food.

Branchiostegus japonicus (Houttuyn)

“ Amadai ”

PL. XXXVII, fig. 5. ×1/2

D. 21; A. 14; scales 70.

Length of body equal to 3 2/3 times that of head, and to 3 1/2 times depth of body. Length of head 4 times diameter of eye, and 2 1/3 times length of snout. Body elongated, compressed; dorsal contour very steep on snout; jaws sub-equal; maxillary partly concealed by pre-orbital, extending to a vertical from centre of pupil. Teeth of upper jaw in two series, an outer single row of enlarged teeth, and an inner narrow band of minute ones; those of lower jaw similar; gill rakers 7+13 in number, slender near middle of arch, becoming very small at ends; posterior edge of pre-opercle finely denticulated. Body covered with finely ctenoid scales; lateral line not very distinct. Body pinkish, shaded in places to various colours, Attains a length of 450 mm. Is highly esteemed as food and commands a high price.

Zeus japonicus Cuvier & Valenciennes

“ Matodai ”

PL. XXXVII, fig. 6. ×1/2

D. X, 23; A. IV, 22; V. I, 7; scales 110

Length of body equal to 2 1/2 times that of head, and to 2 times depth of body; length of head about twice that of snout, and 4 1/2 times diameter of eye. Body ovate, deep, strongly compressed, covered with very small cycloid scales. There are 7 bony bucklers along base of soft dorsal fin, but none along base of spinous dorsal; 6 similar bucklers along base of anal on each side; a series of spinous plates between ventral and anal, each plate being armed with a pair of spines. Mouth rather large, upper jaw protractile; there are small teeth in jaws and on vomer, but none on palatines. Two spines behind and above eye, top of head with 2 ridges between eyes. Spinous dorsal strong and elongated, produced in filaments. Body silvery-white, light brownish-grey above; there is a large blackish ocellus at middle of side. Total length attains to upwards of 300 mm. This species ranges in distribution from Tokyo to Kysyu, very common in shallow bays of southern Japan.

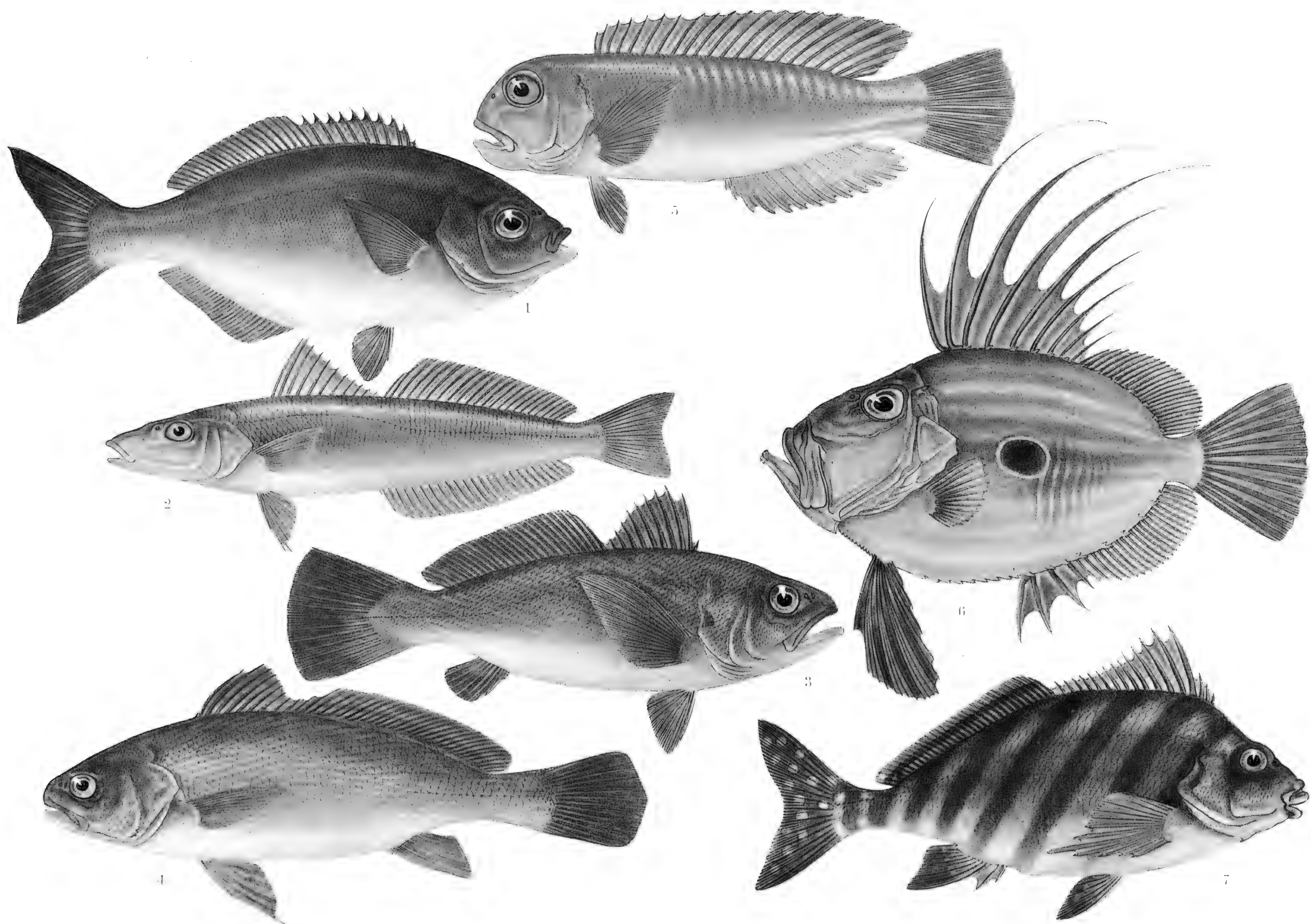
Goniistius zonatus (Cuvier & Valenciennes)

“ Takanoha-dai ”

PL. XXXVII, fig. 7. ×2/3

D. XVII, 32; A. III, 8; scales 60.

Length of body equal to 3 1/2 times that of head, and to 3 times depth of body; length of head equal to 2 2/3 times that of snout, and to 4 1/4 times diameter of eye. Body oblong, compressed and the nape greatly elevated; head rather short, its upper profile rather abrupt. Mouth small; lips thick; teeth in jaws small, pointed, in a narrow band, outer ones being enlarged; none on vomer or palatines. Pre-opercle entire; opercle ending in two indistinct flattish spines. Body gradually fading out on lower parts; first bar across eye and last on caudal peduncle; basal part of soft parts with a dark longitudinal band; caudal dark brown, marked with about 12 pale round spots, having a darker posterior margin. It attains to 250 mm. in total length. Rather common in southern Japan, ranging in distribution from Formosa northwards to Tokyo.





キ ウ セ ン
Halichoeres poecilopterus (Temminck & Schlegel)
(第三十八圖版 第一圖 (雌), 第二圖 (雄)) ×1
D. IX, 14; A. III, 14; scales 26.
體長は頭長の 4 ¹ / ₁₀ 倍, 體高の 3 ¹ / ₂ 倍なり。頭長は吻長の 2 ³ / ₄ 倍, 眼径の6倍なり。體は延長側扁し, 稍大なる鱗を有す。齒は側方1列にして基底に於て癒合せり。上顎の後方より大なる牙狀齒ありて前方に突出せり。兩齒の前方には各4個の犬齒あり。前鰓蓋骨の邊緣は無棘なり。頭部に鱗なく, 鰭の基底に鱗稍なし。體色は雌雄之を異にし雄は淡褐綠色にして2條の褐色縦線あり。其の1條は背部に他の1條は側線下を走れり。尙胸鰭先端の體側には大なる黒褐色の斑紋あり。雌は赤青色にして雄の如き黒褐色の斑紋なし。體長200 耗に達す。本種は北海道より琉球に迄分布すれど南日本に多し。主に植物性餌料を食し, 5-30 歳の淺き内灣に棲息す。六, 七月の頃産卵す。美味なり。
サ サ ノ ハ ベ ラ (雌)
Duymaeria flagellifera (Cuvier & Valenciennes)
(第三十八圖版 第三圖) ×1
D. IX, 11; A. III, 9; scales 22.
體長は頭長の 3 ¹ / ₅ 倍, 體高の 2 ¹ / ₂ 倍なり。體は橢圓形にして稍短く, 且側扁し, 甚だ大なる鱗を有す。兩顎の齒は側方に於て1列, 前方に於て2列にして其外4列の齒は強き犬齒となれり。上顎に後犬齒あり。前鰓蓋骨後縁は鋸齒をなせり。雄に於ては背鰭の前2棘の膜が糸狀形に延長せり。雌雄に依りて著しく體色を異にせり。即ち雄は紫黒褐色にして, 各鱗の後縁は淡色, 頬及び鰓蓋骨には淡色の網狀紋あり。又背鰭は帶黑色にして, 綠色の網狀模様を有す。雌の體色は鮮綠色にして各鱗の後縁は淡く, 胸部及び腹面の各鱗には小なる鮮綠色點あり。背鰭, 臀鰭及び尾鰭は綠色なり。體長200 耗に達し, 東京より臺灣に分布す。
サ サ ノ ハ ベ ラ (雌)
Pseudolabrus japonicus (Houttuyn)
(第三十八圖版 第四圖) ×1
D. IX, 10; A. III, 10; scales 23.
體長は頭長の 3 ¹ / ₅ 倍, 體高の 2 ² / ₅ 倍なり。體は稍延長し, 體高稍高く, 側扁し, 吻は稍尖れり。兩顎の側方に存する齒は1列にして, 前方にては2列となり, 外列齒は強き犬齒となれり。上顎の後方に1或は2個の距き牙狀犬齒あり。背鰭及び臀鰭の基底には鱗稍あり。尾鰭は後縁截形或は稍凹し。體色は雌雄に依りて之を異にす。雄は緑青色にして頬部及び喉部に赤黄色の網狀模様あり。體側の上部には約5條の帶黑色の縦帶走れり。背鰭は緑青色にして黄赤色の網狀紋あり。又棘部には大なる1黒斑紋あり。臀鰭は緑青色にて煉瓦色を呈せる3條の波狀横帯あり。雌は帶赤色にして頭部背面には幅狭き黑色の綫あり。背鰭基底下部に2列の帶黄白色の斑點列あり。背鰭には2列の小黒點あり。體長200 耗に達す。南日本の淺き内灣に多し。

テ ン ス
Inistius dea (Temminck & Schlegel)
(第三十八圖版 第五圖) × ² / ₅
D. II, VII, 12; A. III, 11; scales 23.
體長は頭長の 3 ² / ₅ 倍, 體高の 2 ¹ / ₂ 倍なり。體は卵形にして體高は高く, 甚だ側扁せり。吻は鈍く其上外廓は稍垂直にして前方隆起せり。眼は小なり。齒は1列にして後犬齒なけれども兩顎前方には各強き2犬齒あり。背鰭及び臀鰭の基底に鱗稍なく, 頭部は無鱗なり。側線は中斷せり。背鰭の前2棘は後部の棘と離れ且糸狀をなせり。尾鰭は稍小なり。體色紫青色にして下方淡し。體側の前方上部に1黒斑點あるも往々之を缺くものあり。體長300 耗に達し南日本に普通なり。

キ ツ ネ タ イ
Verrpo oxycephalus (Bleeker)
(第三十八圖版 第六圖) × ² / ₅
D. XII, 11; A. III, 12; scales 34.
體長は頭長の 2 ² / ₁₀ 倍, 體高の 2 ¹ / ₅ 倍なり。體は紡錘形にして, 吻は甚だ長く稍鋭く尖がれり。兩顎の側方は2列に並び其の外列齒は尖り犬齒狀となり, 後方に至るに従ひ小形となる。上顎の後方には1強犬齒突出せり。前鰓蓋骨後縁は微かに鋸齒をなす。頬及び下鰓蓋骨には多くの小鱗を有し。鰓蓋骨には稍大なる鱗あり。臀鰭及び背鰭基底には鱗稍あり。體は背部は赤く下方に至るに従ひ次第に淡くなる。體側には多くの幅狭き不明瞭なる赤色縦線走る。尙此の外3, 4個の淺き桃色の斑點を有す。背鰭棘の中央部には1大黒點あり。體長300 耗に達す。日本の内海に漁獲さる。

フ ダ イ
Calotomus japonicus (Cuvier & Valenciennes)
(第三十八圖版 第七圖) × ¹ / ₂
D. IX, 10; A. III, scales 21.
體長は頭長の 3 ¹ / ₂ 倍, 體高の 2 ¹ / ₅ 倍なり。頭長は吻長の 2 ¹ / ₅ 倍, 眼径の 4 ² / ₅ 倍なり。體は肥厚し, 前方は稍圓筒形にして甚だ大なる鱗を有す。兩顎齒は小さく, 大きさ等しく, 齒は相互に癒合せずしてむしろ粒狀に近く, 數列に密生せり。頬には4個の大鱗1列に並び鰓蓋骨には大鱗を有す。背鰭及び臀鰭の基底には鱗稍あり。側線は中斷せざれども, 背鰭軟條下に於て急激に下方に曲がれり。體は背方帶青暗褐色にして下方は帶赤黄褐綠色なり。體長600 耗に達し, 南日本の内灣に棲息す。

カ ン タ イ
Semicossyphus reticulatus (Cuvier & Valenciennes)
(第三十八圖版 第八圖) × ¹ / ₂
D. XII, 10; A. III, 12; scales 37.
體長は頭長又は體高の3倍, 頭長は吻長の 2 ¹ / ₅ 倍, 眼径の7倍なり。體は延長し, 側扁す。背外廓は吻部に於て頗る急峻に昂起し, 吻は鋭く, 兩顎殆ど同大なり。齒は2列に並び, 各顎に存する内列のものは癒合して幅狭き且つ鋭き外縁を作れり。外列の齒は上下の兩顎共に各4個の強き牙狀齒となれり。前鰓蓋骨の後縁は細かく鋸齒をなす。頭方鱗は頗る小く。頬部には6又は7列の鱗あり。體は一様に淡赤色なり。體長は600 耗に達す。南日本の海岸に多し。

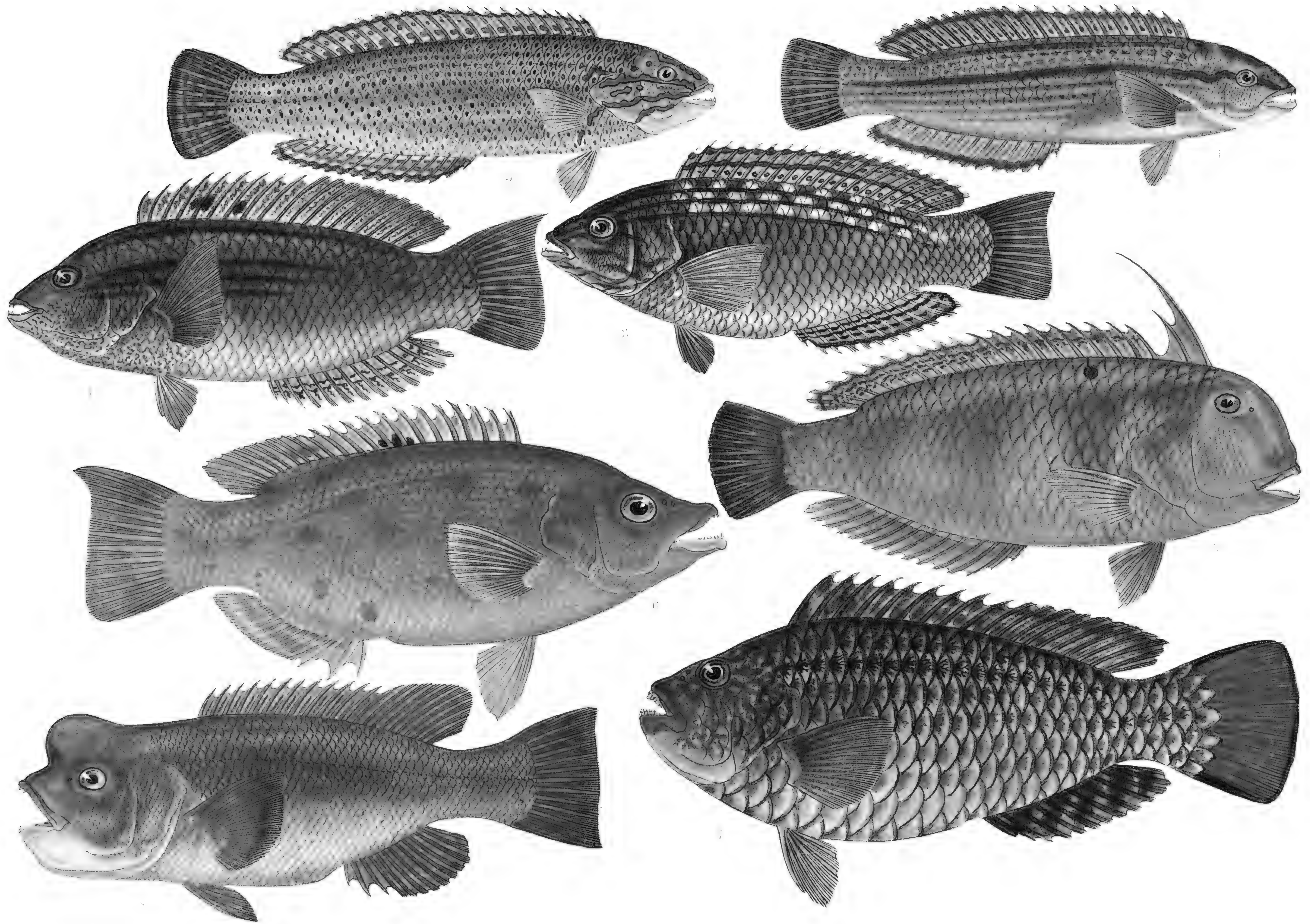
Halichoeres poecilopterus (Temminck & Schlegel)
“ Kiusen ”
PL. XXXVIII, fig. 1. (female), fig. 2. (male) ×1
D. IX, 14; A. III, 14; scales 26.
Length of body equal to 4 ¹ / ₁₀ times that of head, and to 3 ¹ / ₂ times depth of body; length of head 2 ³ / ₄ times that of snout and 6 times diameter of eye. Body elongated and compressed, covered with rather large scales. Teeth arranged in a single series laterally, and coalesce at bases the tips being distinct; a large fang projects at posterior part of upper jaw; at anterior part of both jaws there are four large canines. Colour of male light brownish-blue with two brownish bands, one of which is along back and the other below lateral line; there is a large dark-blue spot on body below end of pectoral fin. Colour of female is reddish blue, with no large dark-blue spot on body below end of the pectoral fin. Body length attains 200 mm. in length. This species found from Hokkaido to Kyusyu, being especially abundant in southern Japan. It is herbivorous and lives chiefly in shallow coastal bays in depths of from 5 to 30 metres. Spawning seas n from June to July. Good as food.

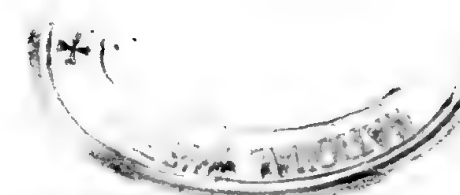
Duymaeria flagellifera (Cuvier & Valenciennes)
“ Sasanoha-bera ” (male)
PL. XXXVIII; fig. 3. ×1
D. IX, 11; A. III, 9; scales 22.
Length of body equal to 3 ¹ / ₅ times that of head, and to 2 ¹ / ₂ times depth of body. Body elliptical, rather short and compressed, covered with very large scales. Teeth arranged in one series laterally, in two series anteriorly, outer ones consisting of 4 strong canines; posterior canines present in upper jaw. Edges of pre-opercles serrated. In the male, membrane of interior 2 spines of the dorsal fin extend as long filaments outwards beyond tip. The sexes unlike in colour; male purplish dark-brown, each scale being edged with light colour, cheeks and opercles with light-coloured reticulations, dorsal fin blackish with reticulations of green; the female yellowish green, the scales bordered with light colour, each scale of breast and belly having a small bright green spot; dorsal, anal, and caudal fins are green. Body length attains to 200 mm. in length, found from Tokyo to Formosa and the Philippines; rather common in coastal waters.

Pseudolabrus japonicus (Houttuyn)
“ Sasanoha-bera ” (male)
PL. XXXVIII, fig. 4. ×1
D. IX, 10; A. III, 10; scales 23.
Length of body equal to 3 ¹ / ₅ times that of head, and to 2 ² / ₅ times depth of body. Body rather elongated, somewhat deep and compressed. Sides of jaws having one series of teeth; and 2 sries anteriorly, the outer ones forming the strong canines. Edge of pre-opercle entire; opercles with large scales; cheek has 4 rows. Colour of body in the sexes; the male having a greenish-blue body, the upper part having about 5 blackish lateral stripes; cheeks and throat with reddish orange reticulations; dorsal fin greenish-blue with reticulations of bright yellowish-red, and its spinous portion having large black blotches; anal greenish-blue with 3 wavy longitudinal lines of brick red; colour of body of female reddish with narrow dark stripes on the upper part of the head; there are a number of very indistinct orange-coloured lateral stripes on the body, and 2 rows of small yellowish white spots below base of dorsal fin, which fin has 2 rows of small black spots. Body length attains to 200 mm. in length. This species is rather common in the coastal waters of southern Japan.

Inistius dea (Temminck & Schlegel)
“ Tensu ”
PL. XXXVIII, fig. 5. × ² / ₅
D. II, VII, 12; A. III, 11; scales 23.
Length of body equal to 3 ² / ₅ times that of head, and to 2 ¹ / ₂ times the depth of the body. Body oval, deep and strongly compressed; snout very blunt, its anterior profile rather vertical with a sharp ridge anteriorly; eyes small. Teeth arranged in one series, no posterior canine, but with two strong canines in front of each jaw. Lateral line interrupted. Two anterior spines of dorsal fin filamentous, and separated from the following ones by a deep notch. Caudal rather small. Body purplish-red, paler below; middle line of the head bright-blue; there is a black spot bordered with blue on anterior part of upper side. Body length attains to 300 mm. in length, rather common in southern Japan. This fish is not tasty as food.
Verreo oxycephalus (Bleeker)
“ Kitune-dai ”
PL. XXXVIII, fig. 6. × ² / ₅
D. XII, 11; A. III, 12; scales 34.
Length of body equal to 2 ² / ₁₀ times that of head, and to 2 ¹ / ₅ times depth of body. Body evenly curved in profile, compressed; snout very long and rather sharply pointed. Lateral teeth in jaws arranged in two series, outer ones canine-like, growing smaller posteriorly, inner ones having coalesced into a narrow blunt-edged plate. Edges of pre-opercle very slightly serrated; cheeks and sub-opercle have many small scales, those of opercle being rather large; base of anal and of posterior part of dorsal have a sheath of scales. Body red, paler below; on sides of the body, there are several, red, narrow, longitudinal lines and 3 or 4 light pink spots; on either side a large black spot on middle of spinous dorsal. It attains to 300 mm. in length. This species is occasionally found in coastal waters of southern Japan.

Calotomus japonicus (Cuvier & Valenciennes)
“ Budai ”
PL. XXXVIII, fig. 7. × ¹ / ₂
D. IX, 10; A. III, 9; scales 21.
Length of the body equal to 3 ¹ / ₂ times that of head, and to 2 ¹ / ₅ times the depth of body. Body heavy, sub-cylindrical, covered with large scales. Teeth of jaws small, equal in size. Cheeks with 4 scales arranged in a single row; opercles with large scales; bases of dorsal and anal fins have sheaths of scales. Colour bluish-dark-brown above, reddish-olive-green below. Body attains to 600 mm. in length; found in coastal rocky places, being rather common in southern Japan. It spawns in Summer.
Semicossyphus reticulatus (Cuvier & Valenciennes)
“ Kandai ”
PL. XXXVIII, fig. 8. × ¹ / ₂
D. XII, 10; A. III, 12; scales 37.
Length of body equal to 3 times that of head, and to 3 times the depth of body. Body elongated, and compressed, dorsal profile very sharply elevated on snout; snout sharp; jaws sub-equal. Teeth arranged in two series, inner ones having coalesced to form a narrow sharp-edged ridge in each jaw; outer row represented by 4 strong, fang-like teeth above and below. Posterior edge of pre-opercle finely serrated. Body uniformly reddish. Body length attains to 600 mm.; this species is rather common in coastal waters of southern Japan





ニザダヒ
 <div>Xesurus scalprum (Cuvier & Valenciennes)</div>
<div></div> <div>（第三十九圖版　第一圖）　×1/2</div>
D. IX, 22; A. III, 21 to 23.

體長は頭長の3 1/2 倍なり・頭長は眼徑の4 倍に相当す。體　稍高く、側扁し絨毛狀に變じたる鱗を以て蔽はる。吻は突出し、先端尖り、其の上部外廓は稍凹めり・口は小さく、兩顎齒は白齒形にして1 列に並び各齒は各5 突起を出だせり・尾柄の兩側には約4 個よりなる1 列の黒き楕狀突起ありて各突起は1 中央隆起線を有す。體は黒褐色にして下方は淡し・體長300 耗に達し、東京より琉球に至る淺き内灣に産す。

ツノダシ
 <div>Zanclus canescens (Linné)</div>
<div></div> <div>（第三十九圖版　第二圖）　×1</div>
D. IX, 38; A. III, 33.

體長は頭長の3 倍、體高の1 2/5 倍なり・頭長は眼徑の3 1/2 倍　吻長の1 1/3 倍なり・體高高く、且強く側扁す。吻は甚だ突出し、其の上部外廓は凹入せり・前頭部に於ける角突起は成熟せるものに於て良く發達せるも幼魚には存せず。背鰭棘は突出し、殊に第三棘は大いに延びて長き糸狀物となれり、其の棘の長さは體の全長よりも長し・然れども其の最後　軟條は短し・體は黄白色にして2 條の幅廣き暗褐色の垂直横帶ありて其の一つは背鰭棘と前鰓との間より起り眼窩、鰓蓋骨、頬部等を垂直に通りて腹面に達せり、他の1 條は背鰭第四棘及び第一軟條の基底部より始まり最も長き臀鰭軟條部に迄及べり、尙此の他に尾鰭を横切れる1 條あり、吻の上面は黒し、體長121 耗に達し、南日本の岩礁多き海岸に産す。

ツバメウロ
 <div>Platax teira (Forskål)</div>
<div></div> <div>（第三十九圖版　第三圖）　×1/2</div>
D. IV to V, 31 to 33; A. III, 23 to 27; scales 75.

體長は頭長の3 乃至4 倍にして體高に略等し・頭長は眼徑の3 倍に等し・體高甚だ高く、且側扁し、背部外廓は腹部外廓より膨出せり・吻は甚だ鈍く其の背部外廓は急峻なり、口は甚だ小さく、兩顎齒は纖小にして側扁し刷毛狀をなせり・前鰓蓋骨の隅角は圓く且平滑なり・背鰭軟條、腹鰭及び臀鰭は甚だしく延長せり・體は灰色にして4 條の垂直横帶あり・體長150 耗に達す・本種は熱帯の海に多く、我國の南部にても時々漁獲さる。

ゲンロクダヒ
 <div>Chaetodon modestus Temminck & Schlegel</div>
<div></div> <div>（第三十九圖版　第四圖）　×1</div>
D. XII, 25; A. III, 21; scales 46.

體長は頭長の3 倍、體高の1 2/5 倍なり・頭長は眼徑の2 2/5 倍に相當す・體は短く、高く、強く側扁せり・頭は小さく、其の前部の上外廓は稍凹み・吻は突出して先端尖がれり、兩顎齒は小にして彎曲し刷毛狀に排列す、諸鰭は突出せず・體色淡綠黃色にして、3 條の著しき垂直の暗褐色線あり、其の1 は眼を通過し、第二の幅廣き垂直線は第三及第七の背鰭棘より腹鰭基底の直後に延長せり・他の1 線は最も幅廣く背鰭軟條の基底より臀鰭の基底に延長せり・背鰭軟條の前部には大なる一圓黒點あり・尾鰭基底に1 垂直黒線あり、吻の先端黒し・體長120 耗に達す・南日本の淺海に産す。

カゴカキダヒ
 <div>Microcanthus strigatus (Cuvier & Valenciennes)</div>
<div></div> <div>（第三十九圖版　第五圖）　×1</div>
D. XI, 16; A. III, 10; scales 62.

體長は頭長の3 倍、體高の2 倍なり・體高は高く側扁し、小鱗を有す、吻は稍突出し、先端尖かれり・兩顎齒は刷毛狀に排列せり・背鰭棘は延長せず・又背鰭軟條及び臀鰭は短し・體は淡青褐色にして體側に7 條の稍傾ける黒褐色の縦帶あり・體長249 耗に達す・南日本に産すれども多からず・且經濟的に重要ならず。

ハタタテダヒ
 <div>Heniochus diphreutes Jordan</div>
<div></div> <div>（第三十九圖版　第六圖）　×1</div>
D. XII, 23; A. III, 17; scales 44.

體長は頭長の3 倍、體高の1 1/5 倍にして、頭長は眼徑の2 3/4 倍、吻長の3 倍なり・體高は甚だ高く側扁し、吻は尖れり、口は稍小にして、上顎骨は鼻孔の近くに達し、兩顎齒は細く鋭し・背鰭は前方高く、第四棘は甚だ長く、糸狀をなし、其の全長は體長と稍等し、胸鰭は低く中等大にして腹棘と稍等長なり、腹鰭は胸鰭の下部にありて甚だ長く臀鰭基底の中間に達し、尾鰭は稍圓し、鱗は小にして側方ものは稍大に、頭部は小、軟背鰭、臀鰭及び尾鰭基底のものは甚だ小なり、體　緑色にして體の前部より2 條の暗褐色の斜帶下方及び後方に走る、軟背鰭、胸鰭及び尾鰭は黃色なり・珊瑚礁及び岩礁等に棲息する小魚なり。

Xesurus scalprum (Cuvier & Valenciennes)
“Nizadai”
PL. XXXIX, fig. 1.　　×1/2

D. IX, 22; A. III, 21. to 23. Length of body equal to 3 1/2 times that of head; the length of head 4 times diameter of eye. Body rather deep and compressed, covered with fine velvet. Snout produced, pointed at tip, and its upper profile rather concave. Mouth small; teeth of jaws incisor-like and arranged in one row, each tooth being 5-lobed. Sides of caudal peduncle armed with a single row of about 4 black bony bucklers, each with a pronounced medium keel. Colour of body brownish-black above, lighter below. This fish attains to more than 300 mm. in length; usually not in demand es food; ranging in distribution from Tokyo to the Ryukyu Islands, being generally found near coast.

Zanclus canescens (Linné)
“Tunodasi”
PL. XXXIX, fig. 2.　　×1
D. IX, 38; A. III, 33.

Length of body equal to about 3 times that of head and to 1 2/5 times depth of body; length of head 3 1/4 times diameter of eye, and 1 1/2 times length of snout. Body deep and strongly compressed; snout greatly produced, its upper profile concave; horn on forehead well developed in adult, but wanting in the young. Dorsal spines elongated, especially the third which is greatly produced, forming a long filament, longer than total length of body; last rays are short. Colour of body yellowish-white, with 2 broad, dark brown vertical bands, the anterior one starting from between first dorsal spine and forehead and descending through the orbit, opercle, and cheek to ventral; second band from between base of fourth spine and first ray to deepest portion of anal fin; third band crosses caudal fin; snout black above. This fish attains to 120 mm. in length; found on rocky shores of southern Japan.

Platax teira (Forskål)
“Tubameuwo”
PL. XXXIX, fig. 3.　　×1/2
D. IV to V, 31 to 33; A. III, 23 to 27; scales 75.

Length of body equal to 3 to 4 times that of head, and rather shorter than or equal to, depth of body; length of head equal to 3 times diameter of eye. Body very deep and compressed, dorsal profile more convex than ventral. Snout very obtuse, with profile very steep; mouth small and teeth of jaws slender, compressed and brush-like. Angle of pre-opercle round and entire. Soft dorsal, anal and ventral fins exceedingly long. Body greyish with four vertical bands; the ocular band is as wide as diameter of eye; the second band passes from dorsal spines to base of ventral fin; the third is very broad, passing from last 2/3 of dorsal fin to corresponding part of anal fin; the fourth and last narrow, passes over root of caudal fin; dorsal, anal, and caudal fins black. These bands become fainter with age. The fish attains to 150 mm. in length. This species abundant in the tropical seas, occasionally found in southern Japan.

Chaetodon modestus Temminck & Schlegel
“Genrokudai”
PL. XXXIX, fig. 4.　　×1

D. XII, 25; A. III, 21; scales 46. Length of body equal to 3 times that of head, and to 1 2/5 times depth of body; length of head 2 2/5 times diameter of eye. Body short, deep and strongly compressed; head small and its anterior profile rather concave; snout produced and pointed at tip. Teeth of jaws curved and arranged brush-like. Fins not projecting. Colour of body light greenish-yellow with three remarkable dark brown bands; first band passes through eye and is equal in width to its diameter; second band broad, starting between third and seventh dorsal spines and extending immediately behind base of ventral fin; third band runs from soft dorsal to anal fins. There is a large black ocellus at anterior portion of soft dorsal fin; a black band at base of caudal fin; tip of snout blackish. This fish attains to 120 mm. in length; is occasionally found in shallow water in southern Japan.

Microcanthus strigatus (Cuvier & Valenciennes)
“Kagokakidai”
PL. XXXIX, fig. 5.　　×1

D. XI, 16; A. III, 16; scales 62. Length of body equal to 3 times that of head, and twice depth of body; length of the head 2 3/4 times diameter of eye. Body deep and compressed, covered with small scales; snout rather produced and pointed at the tip. Teeth of jaws arranged like a brush. Dorsal spines not elevated; soft dorsal and anal fins rather short. Body light bluish-brown with about 7 longitudinal slightly inclined broad blackish-brown bands. The fish attains to a length of 240 mm. It occurs occasionally in seas of southern Japan, and is not of economic significance.

Heniochus diphreutes Jordan
“Hatatatedai”
PL. XXXIX, fig. 6.　　×1

D. XII, 23; A. III, 17; scales 44. Length of body 3 times that of head, and 1 3/5 times depth of body. Length of head 2 3/4 times diameter of eye, and 3 times length of snout. Body deep, compressed, with much elevated back. Head rather deep, with steeply inclined sub-straight profile. Snout moderately long, pointed. Mouth rather small; maxillary reaches nearly to the anterior nostril; teeth in both jaws small and fine. Dorsal fin high in front, graduated to the fourth spine, which is very long, furnished with a filament, and its total length exceeded the entire length of fish; pectoral low, moderate, about equal to the ventral spine; ventral under the pectoral, very long, reaching to the middle of the base of anal; caudal somewhat rounded. Scales finely ciliated, enlarged on the sides, small on the head, and becoming very small on the basal portion of the soft dorsal, anal, and the caudal. Body light bluish in colour, with 2 broad oblique dark brown bands extending downwards and backwards from anterior part of body; soft dorsal, pectoral and caudal yellowish. A small fish, haunts coral reefs and rocky shoals. Unimportant as food, although occurs somewhat commonly.





ア イ ゴ
Siganus fuscescens (Houttuyn)
 <div>（第四十圖版 第一圖） ×¹/₂</div>
D. XIV, 10; A. VII, 9; V. I, 3, I.
體長は頭長の3 ² / ₃ 倍乃至 4 ² / ₃ 倍、體高の 2 ¹ / ₂ 倍乃至 2 ³ / ₄ 倍にして、頭長は眼徑の 3 ³ / ₄ 倍なり。體は卵形にして側扁し、小なる圓鱗を有す。頭は短く、口は小さく、兩顎には 1 列の小なる鋸齒縁を有する臼狀齒を有す。鋤骨及び口蓋骨に齒なし。背鰭棘の基底は長く、殆んど全背面を占め、背鰭の第一棘は短くして前方に向へり。腹鰭の外縁及び内縁に各々 1 棘を有し、其の棘間に 3 軟條を有する事は本種の著しき特質なりとす。體の上部は青褐色にして黄色及び暗黑色等の不明瞭なる斑紋あり。體長 300 耗に達し、南日本の岩礁多き淺き内灣に多し。草食性にして背鰭の根部に毒腺を有す。

ウ マ ヅ ラ ハ キ
Cantherines modestus (Günther)
 <div>（第四十圖版 第二圖） ×¹/₂</div>
D. I, 36 to 38; A. 34 to 36.
體長は頭長の 3 ² / ₅ 倍乃至 3 ³ / ₅ 倍、體高の 2 ¹ / ₅ 倍乃至 2 ³ / ₄ 倍なり。頭長は眼徑の 5 倍なり。體は橢圓形にして側扁し、絨毛狀鱗を有す。吻は長く其の背部外廓は雄にては甚だ僅か膨出すれども雌にては直線的なり。眼は高く且小なり。腹棘は不可動性なり。體は淡青灰色にして下方淡く、諸鰭は鮮青色なり。日本各地の沿岸に饒産す。ハギ類中美味にして、體長通常 400 耗前後なり。

カ ワ ハ キ
Monacanthus cirrifer Temminck & Schlegel
 <div>（第四十圖版 第三圖） ×¹/₂</div>
D. I, 34; A. 33.
體長は頭長の 3 ² / ₅ 倍、體高の 1 ² / ₅ 倍乃至 1 ⁴ / ₅ 倍にして頭長は眼徑の 4 倍に相當す。體は短く、高く甚だ側扁せり。吻は稍突出し、吻端尖り、其の上部外廓は稍凹めり。口は小さく、口唇肥厚し、齒は強く其の縁は凹めり。成熟魚に於て背鰭第二軟條は延長し糸狀となれり。腹鰭棘は小さく可動性なり。體は黃青褐色にして體側には多くの不明瞭なる短き且不規則に排列せる黒褐色條紋あり。體長は最大 300 耗を超ゆ。東京より九州に至る岩礁或は海藻の蕃殖せる淺海に饒産す。夏季産卵す。

モ ン ガ ラ ハ キ
Balistes conspicillum Bloch & Schneider
 <div>（第四十圖版 第四圖） ×¹/₂</div>
D. III, 25 to 26; A. 21 to 22; scales 46 to 55.
體長は頭長の 3 倍、體高の 2 倍にして頭長は吻長の 1 ¹ / ₃ 倍、眼徑の 5 ⁵ / ₇ 倍に相當す。體は橢圓形にして、側扁し、粗雜なる鱗を有す。鰓孔の後方には 3 乃至 4 個の大鱗を有し、尾柄兩側には 3 列の棘並び、其内の 1 列は短し。腹部の棘は甚だ短く可動性なり。體色背部は黒し。然れども兩背鰭間は淡黄色にして、下方淡く、體側の中央部より下方に大なる圓き黃青斑點が 4 縦列に並び、淡褐色の 1 線は吻を横切りて兩眼に達せり。口唇には幅廣き淡褐色輪ありて黒く縁取られ、其の後方には幅狭き淡褐輪あり、尾鰭基底には幅廣き黑色の垂直線あり。其外縁は幅廣き帶褐色の垂直線ありて外縁は黒し。體長 300 耗に達す。函館より東印度諸島に迄分布すれども我國にては稀に漁獲さる。

ク サ ビ マ ン ボ ウ
Banzania makua Jenkins
 <div>（第四十圖版 第五圖） ×¹/₃</div>
D. 17; A. 18; C. 19.
體長は頭長の 2 ⁵ / ₆ 倍、體高の 2 ¹ / ₆ 倍にして頭長は吻長の 2 ¹ / ₃ 倍、眼徑の 6 倍なり。體は卵形にして短く、強く側扁し、後方は截形にして尾柄なし。眼は小にして高く體の中軸線より上方にあり。皮膚は圓滑にして六角形の小骨板規則正しく並べり。背鰭及び臀鰭は甚だ鎌狀をなし、背鰭棘及び腹鰭なし。體は背部暗色にして體側及び腹面は銀白色なり。體側には多くの不規則なる黒線及び小黒點を有す。南日本に分布すれども甚だ稀なり。

マ ン ボ ウ
Mola mola (Linné)
 <div>（第四十圖版 第六圖） ×¹/₁₂</div>
D. 17; A. 16.
體長は頭長の 3 倍、體高の 1 ³ / ₆ 倍なり。體は稍圓盤狀にして強く側扁し、後方截形にして尾柄なし。皮膚は厚く粗雜にしてクサビマンボウに於けるが如き六角形の小骨板なく、無鱗なり。背鰭及び臀鰭は高く鎌狀にして棘なく、腹鰭を缺く。尾鰭外縁は截形にして波狀の外縁を有す。體色背部は黒灰色にして體側及び下方は淡く、且銀色光澤あり。幅廣き 1 黒帯は尾鰭基底に沿ひて走れり。體長 2 米に達す。外洋性にして、溫帶及び熱帶地方に達す。平穩なる時は背鰭を水表面に露出し乍ら游泳す。

Siganus fuscescens (Houttuyn)
“Aigo”
PL. XL, fig. 1. × ¹ / ₂
D. XIV, 10; A. VII, 9; V. I, 3, I.
Length of body equal to 3 ² / ₃ to 4 ² / ₃ times that of head, and to 2 ¹ / ₂ to 2 ³ / ₄ times depth of body; length of head equal to 3 ³ / ₄ times diameter of eye. Body oval, compressed, covered with very small cycloid scales. Head short; mouth small, with a single row of small, serrated incisors; no teeth on vomer or on palatines. First dorsal spine short, directed forwards, rest of spinous portion occupying the greater part of the back; ventral fins each with an outer and an inner spine, and three soft rays between them. Colour of body bluish-brown above, mottled light and dark yellow indistinctly. Total length attains to 500 mm.; occurs on rocky shores of southern Japan. Herbivorous fish, provided with poison glands at root of dorsal spines.

Cantherines modestus (Günther)
“Umazurahagi”
PL. XL, fig. 2. × ¹ / ₂
D. I, 36 to 38; A. 34 to 36.
Length of body equal to 3 ² / ₅ to 3 ³ / ₅ times that of head, and to 2 ¹ / ₅ to 2 ³ / ₄ times depth of body; length of head is 5 times diameter of eye. Body elliptical and compressed, and covered with velvety scales; snout long and its profile gently curved in male but almost straight in female. Eye high and small. Ventral spine immovable and attached to pelvic bone; dorsal spine has a row of antrorse barbs on each side, and a pair of rows of smaller median tubercles in front. Body light bluish-grey and paler below; fins clear blue; this species is one of the commonest fishes all over the coasts of Japan, and the most delicious among the file fishes. Total length attains to more than 300 mm..

Monacanthus cirrifer Temminck & Schlegel
“Kawahagi”
PL. XL, fig. 3. × ¹ / ₂
D. I, 34; A. 33.
Length of body equal to 3 ² / ₅ times that of head, and to 1 ² / ₅ to 1 ⁴ / ₅ times of depth of body; length of head 4 times diameter of eye. Body short, deep and strongly compressed; snout rather produced, pointed at tip and its profile a little concave. Mouth small and lips thick; teeth strong and their edges emarginated. Dorsal fin in the adult with second soft ray much produced; ventral spine small and movable. Body yellowish-brown, with many indistinet, irregular marks; longitudinal blackish-brown bars on sides. This fish attains to more than 300 mm. in length very abundant off rocky shores from Tokyo to Kyusyu. Spawns in Summer; not very palatable as food.

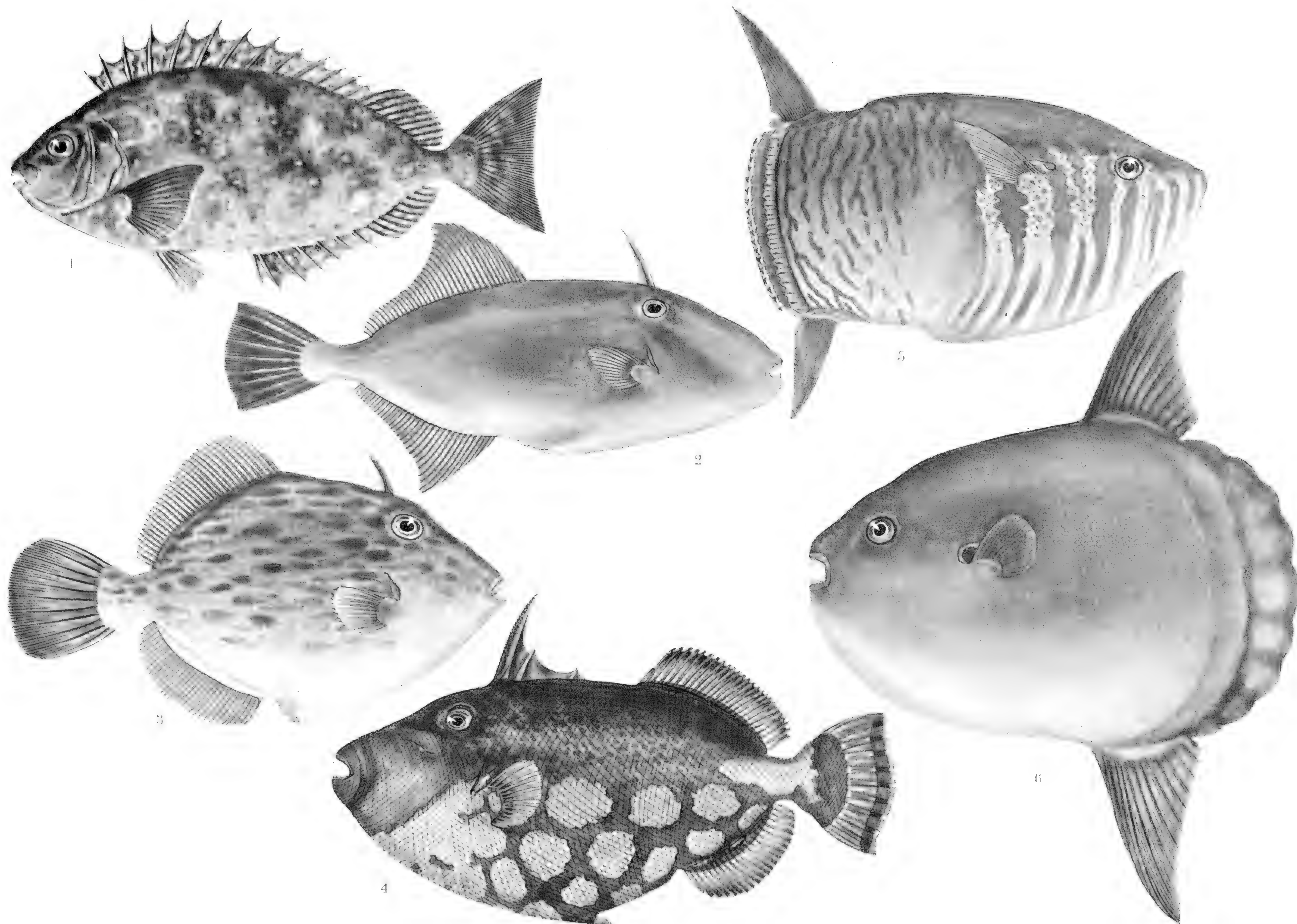
Balistes conspicillum Bloch & Schneider
“Mongarahagi”
PL. XL, fig. 4. × ¹ / ₂

D. III, 25 to 26; A. 21 to 22; scales 46 to 55.
Length of body equal to 3 times that of head,

and twice depth of body; length of head equal to about 5 ⁵ / ₇ times diameter of eye, and to 1 ¹ / ₃ times length of snout. Body elliptical, compressed, covered with rough scales; 3 or 4 enlarged scales behind gill opening; sides of caudal peduncle have two and a half rows of spines. Dorsal and anal fins rather low, caudal fin somewhat truncated, ventral spine very short and movable. Lateral line inconspicuous. Colour of body black above, and paler below with 4 longitudinal rows of large, round, yellowish-blue spots; there is an oblique bluish-brown band on snout, uniting with its fellow of the other side; lips with a broad, light-brown ring with blackish border, followed posteriorly by narrow, light-brown ring. First dorsal fin blackish; bases of second dorsal and anal fins light yellow, and distal parts dusky. Caudal base with a broad vertical blackish band, then light-brown and blackish at distal portion. This fish attains to a length of 300 mm. The species ranges in distribution from Hakodate to East Indies, being very rare in Japan.

Ranzania makua Jenkins
“Kusabi-manbô”
PL. XL, fig. 5. × ¹ / ₃
D. 17; A. 18; C. 19.
Length of body equal to 2 ⁵ / ₆ times that of head, and to 2 ¹ / ₃ times depth of body; length of head equal to 2 ¹ / ₃ times that of snout and to 6 times diameter of eye. Body oblong, short, strongly compressed, truncated behind, without caudal peduncle. Eye small and placed well above axis of body. Skin smooth, tessellated with smooth hexagonal plates. Dorsal and anal fins very high and falcated. Spinous dorsal and ventral fins obsolete. Colour of body dark above; on sides and below silvery; sides of body with many irregular black bands and numerous small black spots. This species is distributed from Hawaii to southern Japan, but occurs rarely.

Mola mola (Linné)
“Manbo”
PL. XL, fig. 6. × ¹ / ₁₂
D. 17; A. 16.
Length of body equal to 3 times that of head, and to 1 ³ / ₅ times depth of body. Body sub-orbicular and strongly compressed, truncated behind; there is no caudal peduncle. Skin thick, rough, without hexagonal plate as in <i>Ranzania makua</i> Jenkins. Dorsal and anal fins high and falcate, without spines; ventral fins absent; caudal fin truncated, with a wavy outline. Body blackish-grey above, sides paler with silvery lustre; a broad black bar extending along base of caudal fin. Body length attains to 2 metres. This fish occurs mostly in temperate and tropical seas, occasionally ranging in distribution northward to Tokyo, San Francisco, Cape Cod, and Great Britain. This species is pelagic, exposing dorsal fin above surface of sea. The intestines are very good as food.





ヒガンフグ

Spheroides pardalis (Temminck & Schlegel)

(第四十一圖版 第一圖) ×²/₃

D. 10 to 11; A. 8 to 9.

體長は頭長の3倍、體高の3¹/₂倍にして、頭長は吻長の2²/₃倍、眼徑の5¹/₃倍なり、體は短く大にして、體側後方には微かなる側褶あり、背面及び腹部には小棘を有せざれども、體全面に皮質小突起を散在せり、背鰭及び臀鰭は短く、鎌狀を呈せず、尾鰭後縁は明かに凹味を帶ぶ、體色背部は暗褐色にして、側方は黄褐色、下方は淡く、背側及び側面には小黑褐點を不規則に密布し、各斑點の大きさも不規則にして、背方に存するものは一般に大なり、背鰭及び胸鰭基底に斑紋なし、背鰭、尾鰭は黒く臀鰭及び胸鰭は黄色なり、體長最大400耗に達し、日本各地の沿岸に稍普通に産す、卵巢及び肝臓には猛烈なる毒素を有す、

マフグ

Spheroides porphyreus (Temminck & Schlegel)

(第四十一圖版 第二圖) ×²/₃

D. 14; A. 12.

體長は頭長の2²/₃倍にして體高の3倍なり、頭長は吻長の2¹/₂倍、眼徑の5¹/₂倍なり、體は長橢圓形にして肥強し、尾部稍短し、體側に皮褶なし、體には棘なけれど、背面には皮質突起散在せり、背鰭及び臀鰭は鎌狀にして尾鰭後縁は明かに鎌狀を呈せり、體色背部は紫褐色にして下方は白く、胸鰭基底の斜上方には一大黒灰色斑紋あり、體長400耗に達す、本種は東京より九州に至る淺海に普通にして、肉は美味なれども肝臓及び卵巢には毒を有し、特に産卵期なる四、五月の頃最も有毒なり、然れどもアカメフグの如く危険ならず、

トラフグ

Spheroides rubripes (Temminck & Schlegel)

(第四十一圖版 第三圖) ×²/₃

D. 14; A. 13.

體長は頭長の3倍、體高の3¹/₂倍なり、頭長は吻長の2¹/₃倍、眼徑の8倍なり、體は長橢圓形にして、稍肥厚し、尾柄は稍細し、體側後部には明かに皮褶あり、體の背部には兩眼間隔より背鰭始部に至る間に多くの小棘を有し、腹部には頭部より肛門に至る迄背面に於けるよりも稍大なる棘を散在せり、體色背部は褐色、下方は淡黄色にして時には鮮黄色なり、胸鰭基底の斜上方には圓き一大黒斑點ありて其の後方に2乃至3個の小斑點及び尙其の後方には不規則なる鰻虫狀の模様を有す、背鰭基底の兩側には各一大黒斑點ありて背鰭上に迄延長せり、我國に産するフグ類中最大にして全長500耗に達す、南日本の沿岸に産産す、毒は餘り激烈ならず、フグ提灯は多くはトラフグより製せらる、

ハリセンボン

Diodon holacanthus Linné

(第四十一圖版 第四圖) ×²/₃

D. 12; A. 12.

體はほとんど球形に近く、全身多くの長き勁棘を以て被はれ各棘は2根を有し直立せしめ得、前部棘は長く、吻端と背鰭始部間に於ける1縦列の棘數は14乃至17棘なり、各顎には1個の齒を有し、各顎齒は中央縫合部にて分離せず、鼻管は1本なるも其の管の側部に2孔を有す、背鰭及び臀鰭は短く、圓く、鎌狀を呈せず且兩者共に後方に存せり、體には大小不同の黒斑點を有す、胸鰭の後方及び上方に各々1個の黒斑紋あり、後頭部に幅廣き1横帶あり、又眼隔を聯ねる同様の1横帶は眼の下方まで延長せり、體長150耗に達し、南日本の淺海に稀に産す、

ハコフグ

Ostracion immaculatum Temminck & Schlegel

(第四十一圖版 第五圖) ×1

D. 9; A. 9; scales 11.

體長は頭長の4倍、體高の2²/₃倍あり、頭長は眼徑の3倍、吻長の1¹/₂倍あり、體は短かく、強固にして、頭部小さく、其背外廓は急傾斜をなす、吻は突出するを得べく背面に凹みあり、口は先端稍下位にして、眼は高く、唇は厚く肉質なり、齒は小さく尖れり、背鰭は臀鰭より後方にあり、尾鰭長し、側方の體壁をなす鱗は六角形にして褐色に黄色を帶べり、本邦暖海り沿岸海藻のある場所に棲み運動不活潑なり、食用とせず、

イトマキフグ

Aracana aculeata (Houttuyn)

(第四十一圖版 第六圖) ×1

D. 11; A. 10.

體長は頭長の3¹/₂倍、體高の2倍にして頭長は吻長の1¹/₄倍、眼徑の2倍なり、體は短く肥厚し硬き不動性の殻を以て被はる、其の甲殻は粗雜な稜を有する大なる六角形の鱗の癒合せるものなり、口唇、肛門の狭き周邊及び尾柄は甲殻を有せず、甲殻には六條の縱走隆起線を有し、背面及び腹部中線に隆起線なし、體側中央部に於ける縱走隆起線上には5個の漸次小形となる棘列あり、腹部側面に存する隆起線には大なる扁平棘あり、眼は大なり、背鰭は臀鰭と對在せり、體色背部は褐色にして下方白く、背面及び體側上方には臙孔より小なる多くの暗褐色點を散在す、體長150耗に達し、房州より九州に至る淺き沿岸に普通に産す、

Spheroides pardalis (Temminck & Schlegel)

“ Higan-hugu ”

PL. XLI, fig. 1. ×²/₃

D. 10 to 11; A. 8 to 9.

Length of body equal to 3 times that of head, and to 3¹/₂ times depth of body; length of head equal to 2²/₃ times that of snout, and to 5¹/₃ times diameter of eye. Body rather robust, with a faint lateral fold posteriorly. Back and belly without prickles, but covered with small dermal elevations all over body. Dorsal and anal fins short, not falcate; caudal fin distinctly rounded posteriorly. Colour of body dark-brown above; sides clear brownish-yellow and paler below; back and sides irregularly, but rather densely, covered with round blackish-brown spots, wich are unequal in size, and rather larger on the back; there are no large blotches at the bases of the dorsal and pectoral fins; dorsal and caudal fins of a dusky colour; anal and pectoral orange. This fish attains to a length of about 400 mm., and is found rather commonly along all the coasts of Japan. There is a strong poison in the viscera of this species.

Spheroides porphyreus (Temminck & Schlegel)

“ Ma-hugu ”

PL. XLI, fig. 2. ×²/₃

D. 14; A. 12.

Length of body equal to 2²/₃ times that of head, and to 3 times depth of body; length of head equal to 2¹/₂ times that of snout, and to 5¹/₂ times diameter of eye. Body oblong, stout, with the tail rather short. Lateral fold obsolete. Skin without prickles, but with dermal papillae on back. Dorsal and anal fins falcate and caudal fin distinctly lunate. Colour of body purplish-brown above, whitish below; there is a large blackish-grey blotch behind base of pectoral fin. Total length attains to 400 mm. Species rather common from Tokyo to Kyusyu; its flesh is delicious to taste, although virulent poisons are present in viscera, especially so at the spawning season in April and May. The poison of this fish not so dangerous as that of *S. chlorops* (Hilgendorf).

Spheroides rubripes (Temminck & Schlegel)

“ Tora-hugu ”

PL. XLI, fig. 3. ×²/₃

D. 14; A. 13.

Length of body equal to 3 times that of head, and to 3¹/₂ times depth of body; length of head equal to 2¹/₃ times that of snout, and to 8 times diameter of eye. Body oblong, rather stout, caudal peduncle somewhat slender. Lateral fold of body distinct posteriorly. Back of body from inter-orbital space to insertion of dorsal fin with rather large prickles from chin to near vent. Dorsal and anal fins large but not falcate. Body greyish-brown above, light-yellow below; there is a large black ocellated blotch on sides of body behind pectoral fin; behind it two or three small ones and irregular vermiculations present; at base of dorsal fin there is a rather large black blotch which extends on to the fin. This fish is among the largest swell-fish, in Japan attaining to 500 mm. in length; very abundant on the coast of southern Japan.

It is the most delicious among the puffers; lanterns made of its skin are on sale in curio-shops in Japan. The sting is only slightly poisonous.

Diodon holacanthus Linné

“ Haris-nbon ”

PL. XLI, fig. 4. ×²/₃

D. 12; A. 12.

Body nearly globular, with many long, strong dermal spines which are 2-rooted and erectile, but immovable; frontal spines long; there are 14 to 17 spines in a row between snout and insertion of dorsal fin. Teeth of jaws not divided by a median suture. Nasal tube simple but with two lateral openings. Dorsal and anal fins short, rounded, not falcate and placed posteriorly. Body mottled with black blotches of unequal sizes; there is a black blotch behind the pectoral fin, and also another above each pectoral fin. This fish attains to a length of 150 mm.; occurs occasionally in shallow seas of southern Japan.

Ostracion immaculatum (Temminck & Schlegel)

“ Hako-hugu ”

PL. XLI, fig. 5. ×1

D. 9; A. 9; scales 11.

Length of body 4 times that of head and 2²/₃ times depth of body. Length of head 3 times diameter of eye and 1¹/₂ times length of snout. Body shortish, stout; head small, with profile steep in front. Snout protruded, concave in profile. Mouth sub-inferior, eye high; lips thick and fleshy. Teeth rather small pointed. Dorsal entirely opposite in front of anal, and a little higher than anal; caudal long, obtusely convex posteriorly. Scales of carapace mostly hexagonal on sides. Colour brownish yellow, profusely spotted. A sluggish sea fish of southern Japan.

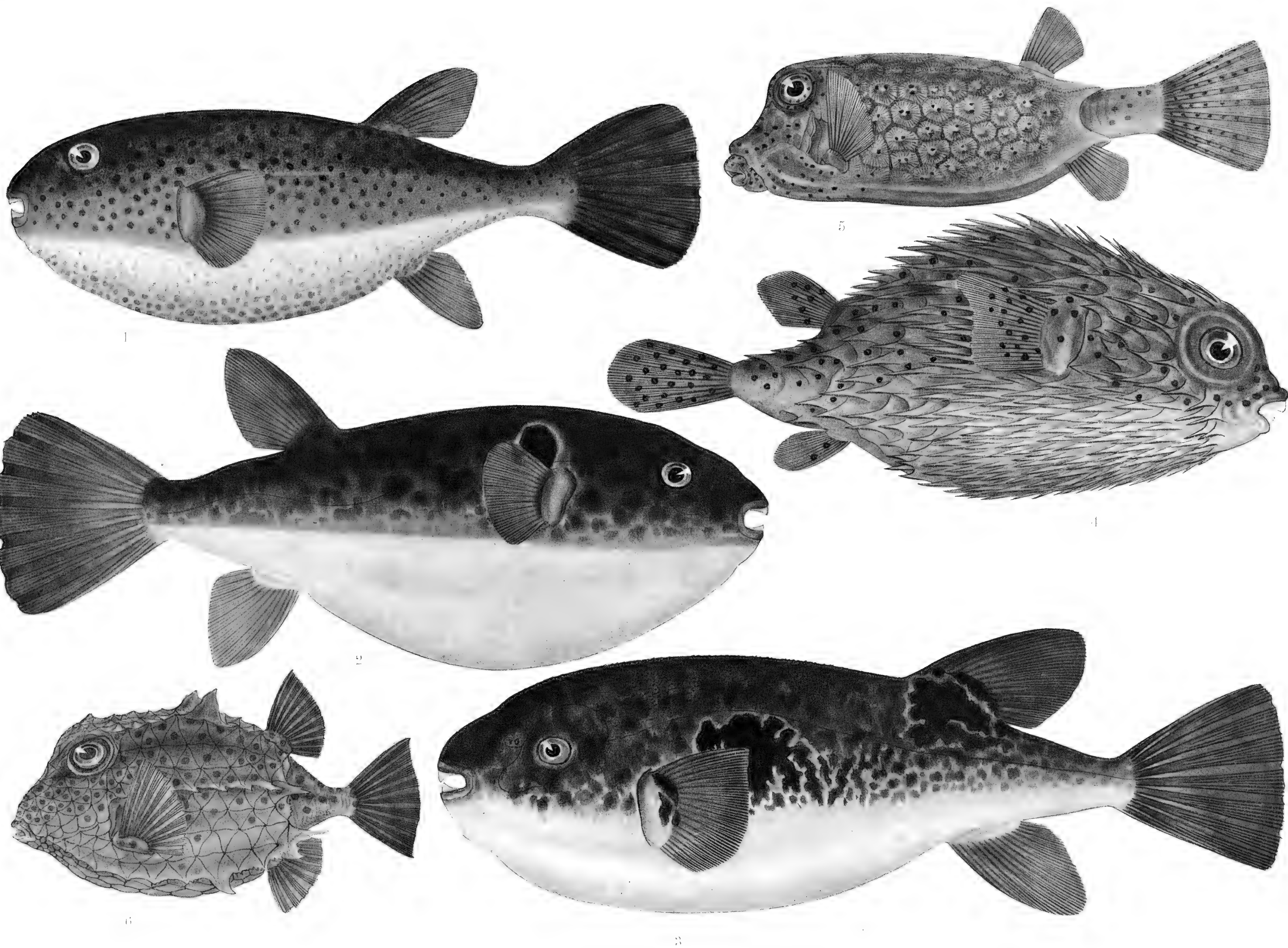
Aracana aculeata (Houttuyn)

“ Iiomaki-hugu ”

PL. XLI, fig. 6. ×1

D. 11; A. 10.

Length of body equal to 3¹/₄ times that of head, and twice depth of body; length of head equal to 1¹/₄ times that of snout and twice diameter of eye. Body short, stout, covered with hard immovable, 6-angled carapace formed by fusion of coarsely-striated large scales; lips, narrow part about vent, and caudal peduncle free from carapace; carapace has six ridges; there is no ridge on middle of back or belly; there is a broad, flat spine directed outwards and slightly backwards about middle portion between posterior margin of eye and origin of dorsal fin, this spine being followed by two very short ones; one prominent middle lateral ridge with five graduated spines, increasing in size from the front backwards; on the lower lateral ridge there is a large flat spine. Eyes large. Dorsal fin opposite to anal. Body brownish above, whitish below; back and upper part of body having dark-brown spots which are smaller than pupil. It attains to 150 mm. in length; found in rather shallow waters from Bosyu to Kyusyu.



TOTAL

タケノコメバル
Sebastodes joyneri (Günther)
(第四十二圖版 第一圖) ×1/2
D. XIII, 14 to 15; A. III, 7; scales (Pores) 43 to 51.
體長は頭長の3倍乃至3 1/6倍、體高の2 7/10倍乃至2 9/10倍なり。頭長は吻長の4 1/4倍、眼徑の2 7/10乃至3 2/5倍なり。主上顎骨は眼の中央垂直下に達せず。下顎は上顎より長く且下顎縫合部に一小膨出部あり。齒は小さく、鋭く幅狭き齒帶をなす。前眼骨には強き2棘ありて後部下方に向へり。頭上隆起線甚だ低く鋭き棘にて終れり。胸鰭は殆ど頭長に等しく、臀鰭に迄達せり。體色背部は灰赤色にして下方淡く、體側上方には5條の暗横帶ありて各横帶は背鰭に迄延長せり。第二及び第三横帶最も長く第一横帶は時に中断せり。最後の2條の暗帶は圓く且最小なり。全長300 耗に達す。北海道より東京に至る岩礁海岸に産すれども多からず。

キ　　チ　　ジ
Sebastolobus macrochir (Günther)
(第四十二圖版 第二圖) ×2/3
D. XV, 6; A. III, 5; scales 45.
體長は頭長の2 1/2倍、體高の3 1/4倍なり。頭長は眼徑の3倍、吻長の4倍なり。眼は甚だ大きく、其の徑は吻長より長し。口は大きく、兩顎、鋤骨及び口蓋骨齒は幅狭き齒帶をなす。前鰓蓋骨に5棘ありて一直線上に並べり。此の外眼前棘、後眼棘、眼上棘、頂棘、壁棘及び頂棘あり。胸鰭基底幅廣く、下部の5乃至6軟條は上部軟條を超えて延長せり。體は鮮赤色にして背鰭棘の後半部には一大黒斑あり。體長300 耗に達す。北は北海道、南は東京に迄分布す。300 尋以上の深き砂底に棲息せり。

バラメヌケ
Sebastodes baramenuke Wakiya
(第四十二圖版 第三圖) ×1/2
D. XIII, 14; A. III, 8; scales 38.
體長は頭長及び體高の2 7/10倍にして、頭長は眼徑の3 1/2倍、吻長の4倍あり。體は長橢圓形にして背部は稍強く上昇す。頭部外廓は僅かに凸形をなす。眼は稍大に吻は突る。口は大にして僅かに傾斜し、上顎骨は眼の間下に達す。鱗は大にして櫛狀をなす。背鰭は連続すれども明瞭に區別せられ尾鰭は凹形なり。體は美しき赤色にして下部淡く、北日本の深海に産す。

ア　　コ　　ウ
Sebastodes matsubarae (Hilgendorf)
(第四十二圖版 第四圖) ×1/2
D. XIII, 13; A. III, 7; scales (Pores) 32.
體長は頭長の3 3/5倍、體高の2 1/2倍なり。頭長は主上顎骨の2 1/6倍、眼徑の2 3/4倍なり。下顎は上顎より稍突出し、下顎縫合部に於ける瘤狀膨出部大なり。兩顎及び口蓋骨にある小なる鋭き齒は幅狭き齒帶をなして並べり。兩眼の間隔幅廣く且凹めり。胸鰭は臀鰭の第三棘に達し腹鰭は肛門に達せり。體は強き櫛鱗を有す。眼前部主上顎骨及び下顎には微小鱗あり。腸間膜は色黒し。體は深紅色にして鰓蓋骨は暗黒部あり。本種は相模灣より北海道に至る100 尋以上の深海に多し。春季産卵す。冬期美味なり。

ク　　ロ　　ソ　　イ
Sebastodes schlegeli (Hilgendorf)
(第四十二圖版 第五圖) ×1/2
D. XIII, 12; A. III, 7; scales 54.
體長は頭長の2 2/3倍、體高の2 4/5倍、頭長は眼徑の4 2/5倍、吻長の4倍なり。體は長橢圓形にして側扁し。背外廓は稍角狀をなす。頭部は強く、其外廓は稍直線をなし、眼は中等大にして吻突る。口は大にして傾斜し、上顎骨は眼の後縁下に達す。兩顎齒は帶狀に排列し、鋤骨、及び口蓋に齒を有す。眼隔は僅かに凸形をなし、其隆起は低く、圓し。背鰭は連続す。體は暗色にして稀に不規則なる斑紋、體の上部に存す。鰭邊縁は暗色なり。北日本沿岸に産す。

メ　　バ　　ル
Sebastodes güntheri Jordan & Starks
(第四十二圖版 第六圖) ×1/2
D. XIII, 14; A. III, 8; scales (Pores) 50.
體長は頭長の3 1/3倍、體高の2 3/4倍なり。頭長は主上顎骨の2 1/2倍、眼徑の3 1/2倍なり。齒は小さく、幅狭き齒帶をなす。頭部隆起線低く、鋭き小棘を以て終れり。胸鰭は腹鰭の終りに迄達す。腸間膜は白し。體色背部は黒灰色、下方は淡く體側には4條の不規則形の横帶あり。諸鰭は黒し。體長240 耗に達す。北海道より和歌浦に至る岩礁海岸に多く、稍美味なり。

Sebastodes joyneri (Günther)
“Takenokomebaru”
PL. XLII, fig. 1. ×1/2
D. XIII, 14 to 15; A. III, 7; scales (pores) 43 to 51.
Length of body equal to 3 to 3 1/6 times that of head and to 2 7/10 to 2 9/10 times the greatest depth of body; length of head equal to 4 1/4 times that of snout and to 2 7/10 to 3 2/5 times the diameter of orbit. Maxillary not reaching middle of eye; lower jaw longer than the upper, with a symphyseal knob; teeth small, sharp, arranged in narrow bands. Pre-orbital with two strong spines which direct downward and backward. Ridges of head very low, ending in acute spines. Pectoral fins nearly as long as herd, barely reaching anal. Colour of body greyish-red above, paler below; with five dark cross bands on the upper side of body which more or less extend to dorsal fin; second or third of them the largest; first band occasionally inter-rupted; last two rounded, and tho smallest. Attains to 300 mm. in total length; occurs on the rocky shores from Hokkaido to Tokyo; not so common.

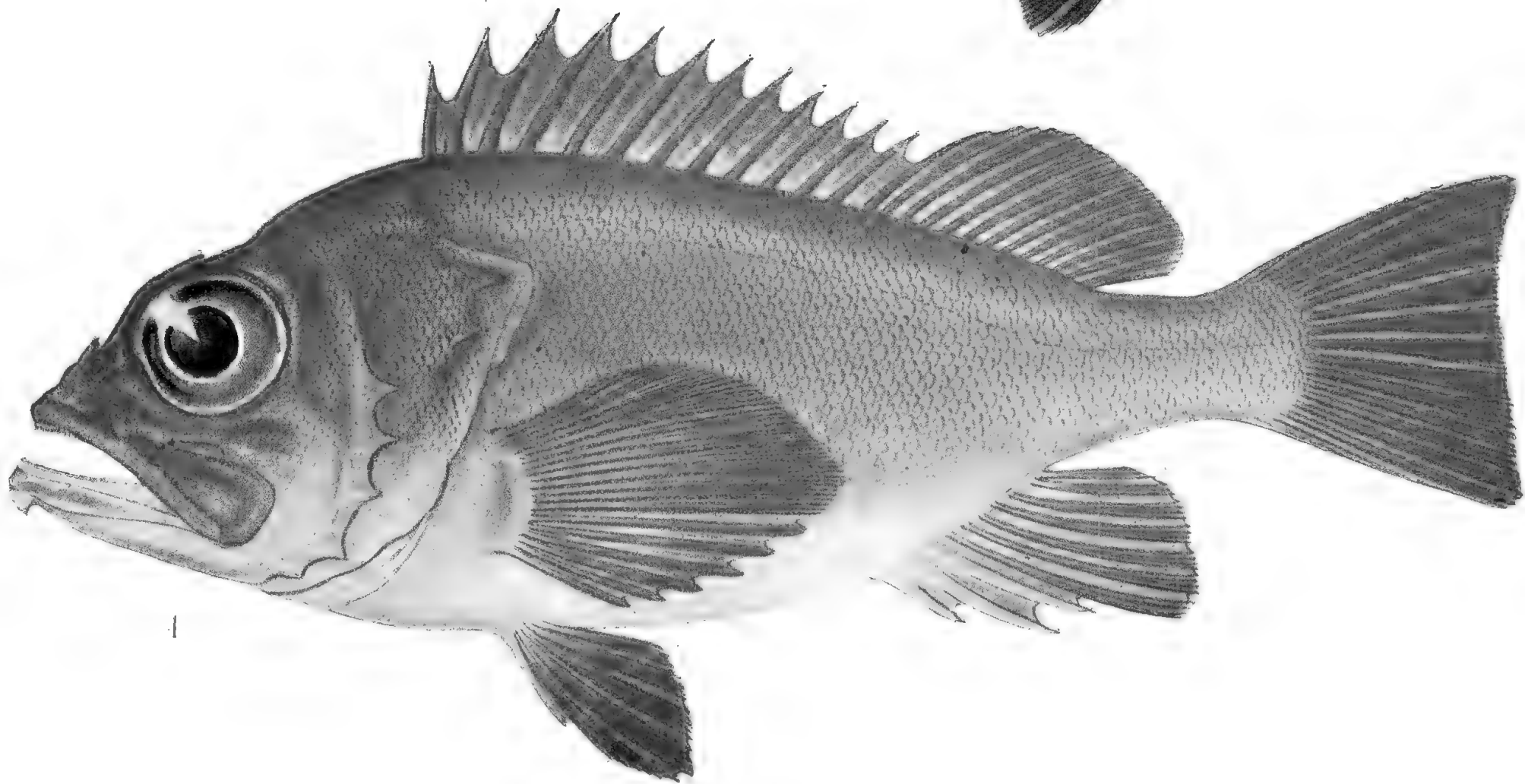
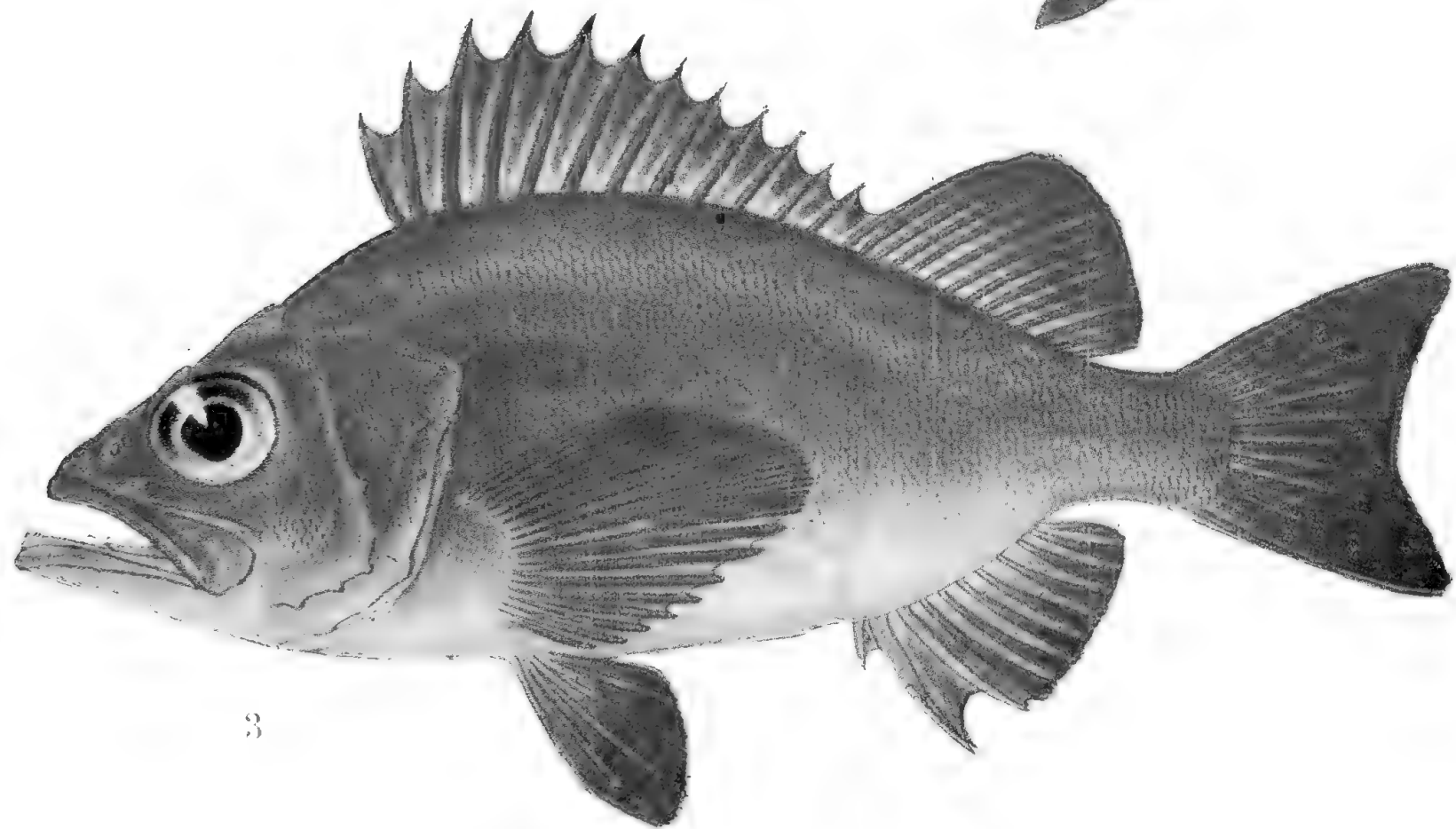
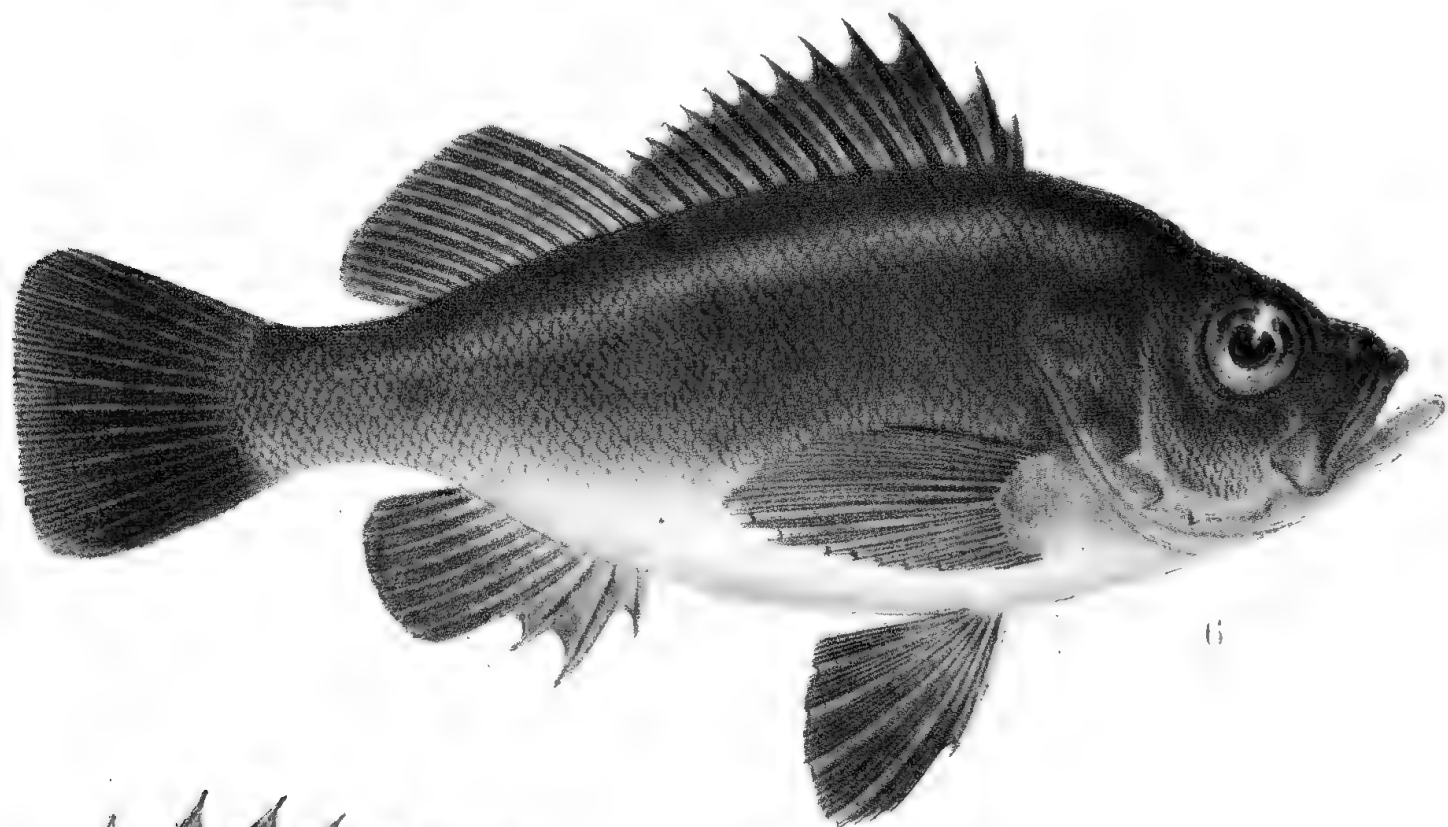
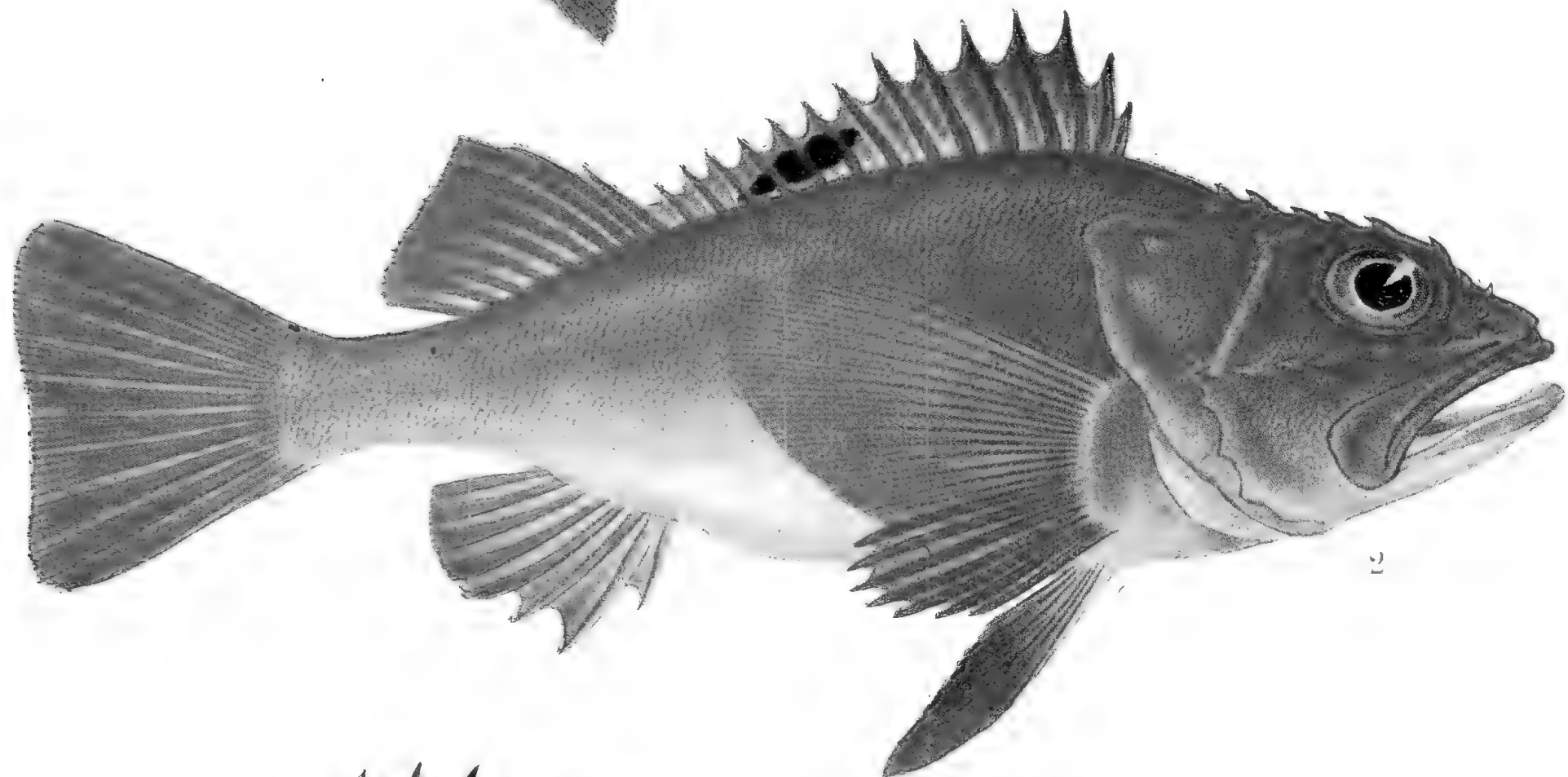
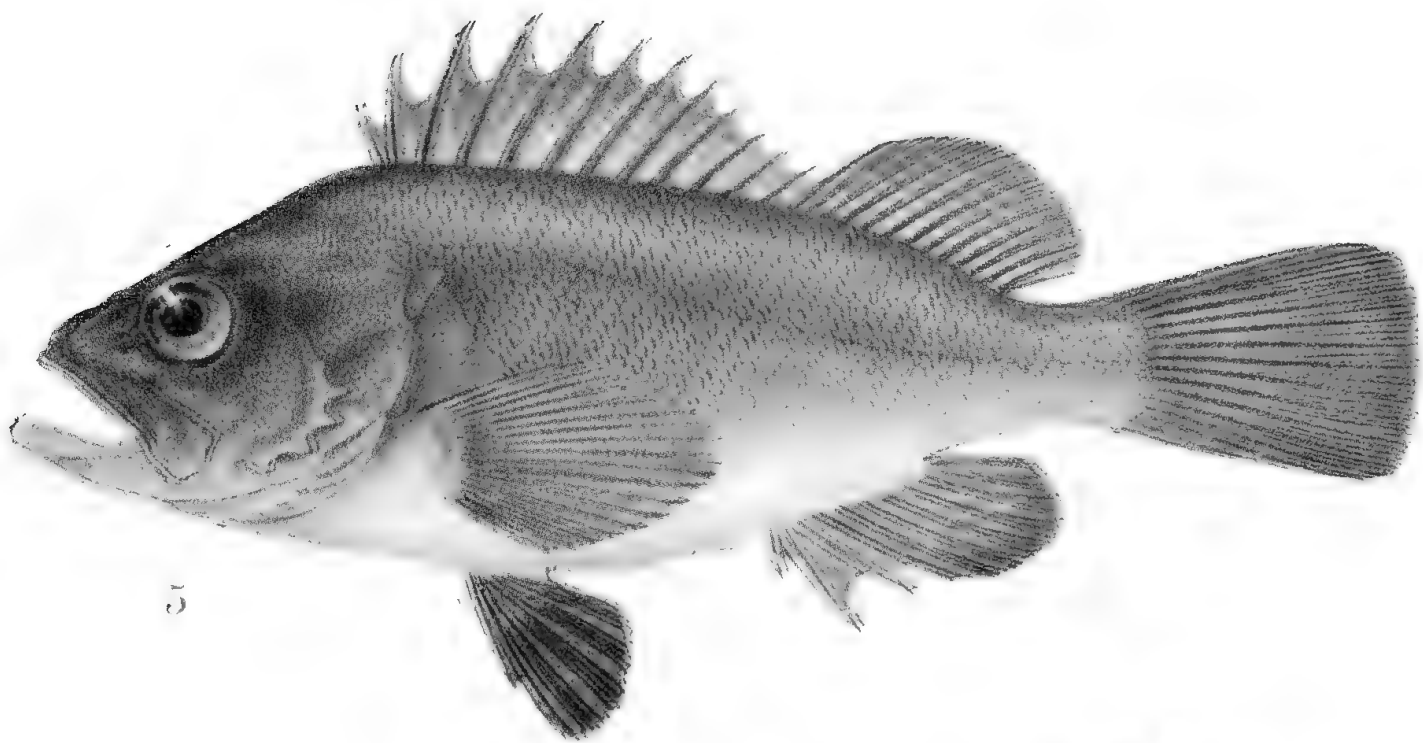
Sebastolobus macrochir (Günther)
“Kitiji”
PL. XLII, fig. 2. ×2/3
D. XV, 6; A. III, 5; scales 45.
Length of body equal to 2 1/2 times that of head, and to 3 1/4 times depth of body; length of head equal to 3 times diameter of eye, and to 4 times length of snout. Eye very large, with its diameter longer than snout. Mouth large; teeth in jaws, on vomer and palatines are arranged in narrow bands. Pre-opercle arranged in a straight line with 5 sharp spines more-over there are pre-ocular, post-ocular, supra-ocular, tympanic, parietal and nuchal spines. Pectoral fin with a wide base, 5 or 6 lower rays extending backward beyond those above. Colour of body red, and there is a black blotch on the posterior half of spinous dorsal. Attains to 300 mm. in length; found from Hokkaido to Tokyo; occurring on sandy bottoms, upwards of 300 metres. Spawns in April and May.

Sebastodes baramenuke Wakiya
“Baramenuke”
PL. XLII, fig. 3. ×1/2
D. XIII, 14; A. III, 8; scales 38.
Length of body 2 7/10 times that or head, or depth of body. Length of head 3 1/2 times diameter of eye and 4 times length of snout. Body oblong, with rather strongly elevated back. Head stout and heavy, with slightly concave profile. Eye rather large, snout pointed. Mouth large, slightly oblique; maxillary extending to the beneath middle of eye. Scales large, strongly ctenoid. Dorsal fins continuous, with a distinct notch; caudal emarginated. Bright red in colour, lighter below. Beautiful deep sea fish. Occurs in northern Japan.

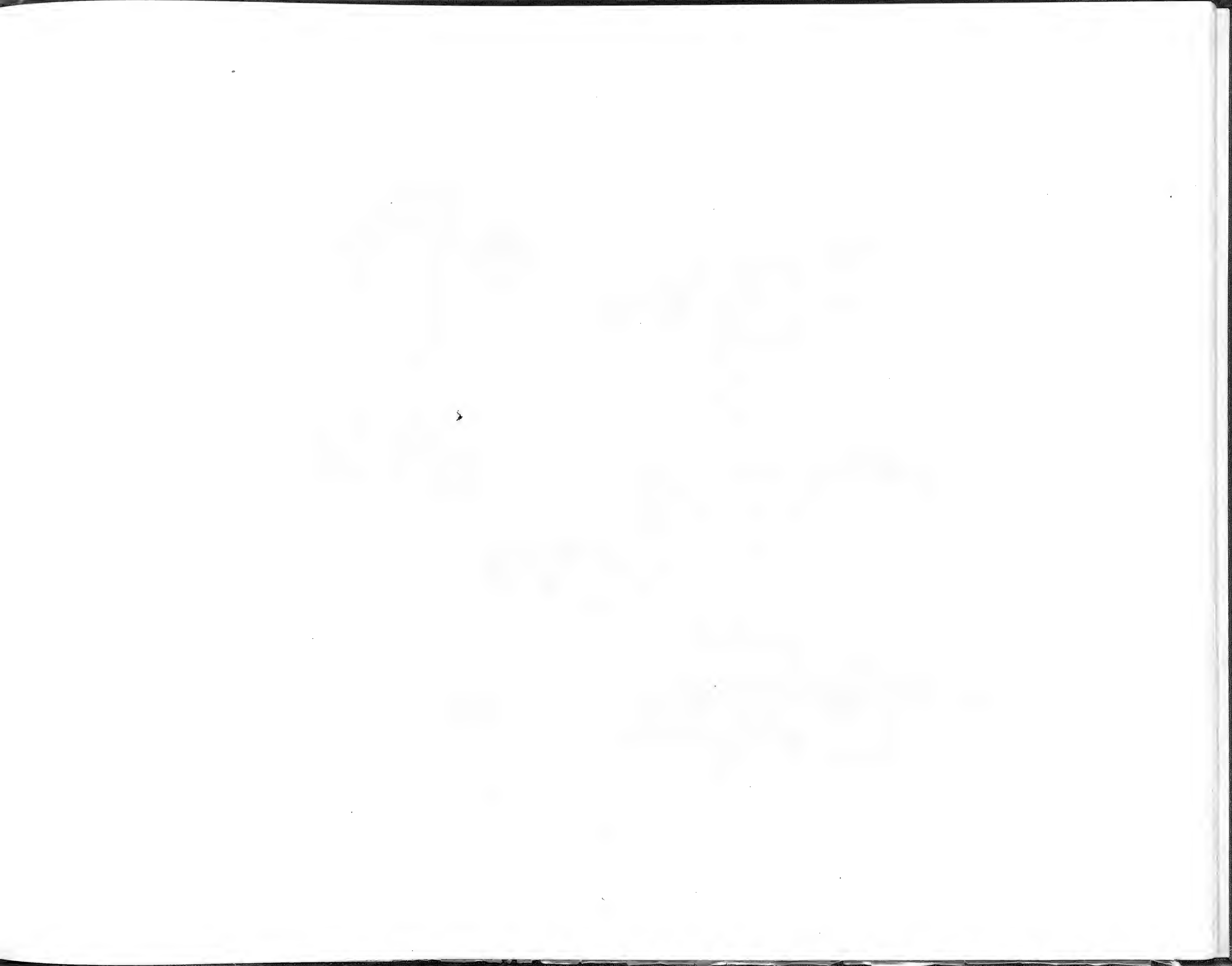
Sebastodes matsubarae (Hilgendorf)
“Akô”
PL. XLII, fig. 4. ×1/2
D. XIII, 13; A. III, 7; scales (pores) 32.
Length of body equal to 2 3/5 times that of head, and to 2 1/2 times depth of body; length of head equal to 2 1/5 times that of maxillary and to 2 3/4 times the diameter of eye. Lower jaw slightly projected beyond the upper; symphyseal knob of the lower jaw prominent; teeth small and sharp, arranged in very narrow bands in jaws and also on palatines. Inter-orbital space broad and concave. Pectoral fin reached to the third anal spine, and also ventral to vent. Body covered with strong ctenoid scales; pre-orbital, maxillary and mandible with fine scales. Peritonium jet-black. Colour of body deep red, with a dusky shade on opercle. This species is rather abundant in deep waters upwards of 100 metres from Sagami Bay to Hokkaido. Spawns in spring. Flesh rather delicious in Winter.

Sebastodes schlegeli (Hilgendorf)
“Kurosoi”
PL. XLII, fig. 5. ×1/3
D. XIII, 12; A. III, 7; scales 54.
Length of body 2 2/3 times that of head, and 2 1/5 times depth of body. Length of head 4 2/5 times diameter of eye, and 4 times length of snout. Body oblong and compressed, somewhat curved on upper outline. Head stout, with sub-straight profile; eye moderately large; snout pointed. Mouth large, a trifle oblique; maxillary reaching to below posterior margin of eye. Teeth in bands in jaws, and also on vomer and palatines. Inter-orbital space a little convex; inter-orbital ridges very low, rounded. Head not strongly furnished, the spines all lying close to the suface. Dorsal fins continuous although having a notch. Dark in colour, with scarcely noticeable irregular blotches on upper parts; fins broadly edged with darker colour. A shore fish of northern Japan.

Sebastodes güntheri Jordan & Starks
“Mebaru”
PL. XLII, fig. 6. ×1/2
D. XIII, 14; A. III, 8; scales (pores) 50.
Length of body equal to 3 1/5 times that of head, and to 2 3/4 times depth of body; length of head equal to 2 1/2 times that of maxillary and to 3 1/2 times the diameter of eye. Teeth small, arranged in narrow bands. Ridges of head low, ending in small sharp spines. Pectoral fin reaches to the end of ventral fin. Peritonium white. Body blackish-grey above, paler below, sides with 4 broken irregular cross-bars; fins black. Attains to a length of 240 mm. and very common along the rocky shores from Hokkaido to Wakanoura. Flesh is rather delicious in taste.







カ　　サ　　ゴ
Sebastiscus marmoratus (Cuvier & Valenciennes)
（第四十三圖版　第一圖） × $\frac{1}{2}$
D. XII, 12; A. III, 5; 側線孔 46.

體長は頭長の $2\frac{2}{3}$ 倍、體高の $2\frac{5}{6}$ 倍なり。頭長は主上顎骨の $2\frac{1}{4}$ 倍、眼徑の $4\frac{1}{4}$ 倍なり。體は稍肥厚せり。主上顎骨は眼の後縁下に達せり。兩顎は同様にして下顎縫合部の膨出部小なり。兩顎には稍幅廣き齒帶を有すれども鋤骨及び口蓋骨の其れは狭し。後頭隆起高し。眼前部に3棘あり。頭頂には櫛鱗を有す。腸間膜は白し。鱗あり。體は帶赤褐色にして下方淡く、背鰭の基底には5個の帶赤黃色斑點あり。體には多くの小青色點を散布し、背鰭臀鰭及び胸鰭にも同様の小點あり。尾鰭の斑點は白し。體長240 耗に達し北海道より九州に至る岩礁海岸に多産す。本種は冬期胎生兒を産む。仔魚は甚だ小さく、又其の數甚だ多し。専ら動物餌を食す。體色及び斑紋は環境に応じて多少の變化性あり。

フ　　サ　　カ　　サ　　ゴ
Scorpaena fimbriata Döderlein.
（第四十三圖版　第二圖） × $\frac{1}{2}$
D. XII, 10; A. III, 6; scales 40.
體長は頭長の $2\frac{1}{3}$ 倍、體高の $2\frac{1}{2}$ 倍なり。頭長は主上顎骨の $2\frac{1}{3}$ 倍、眼徑の4倍なり。體は稍鈍し。兩顎は同長にして幅狭き齒帶を有し、鋤骨及び口蓋骨の齒帶は尙幅狭し。下顎縫合部には小膨出部あり。頭骨の棘は甚だ鋭し。兩眼間隔狭く、深く凹入し、眼上隆起線には一大皮膚突出物あり。腸間膜は白し。胸鰭は丁度肛門上に達す。體色帶赤褐色にして背部には背鰭棘に連續せる不規則不明瞭の斑紋あり。背鰭棘の後半部には一大黒斑あり。體長300 耗に達し、東京近傍に多し。

モ　　　　　　ヨ
Sebastichthys elegans (Steindachner & Döderlein)
（第四十三圖版　第三圖） × $\frac{1}{2}$
D. XIII, 12; A. III, 7; 側線孔 30.
體長は體高の $2\frac{1}{2}$ 倍、頭長の $2\frac{1}{2}$ 倍なり。口は稍大きく主上顎骨は眼窩の殆んど後縁の下方に達す。齒は帶狀をなせり。兩眼間隔は深く凹形を呈し、眼上縁は隆起す。眼隔の中央近くには二つの長い隆起がある。鱗は小さい櫛鱗である。體色は灰色で暗色と淡桃色との斑紋を錯綜し、四つの不明瞭な横斑を有す。第一は肩帶部に第二は胸鰭の後方に第三は臀鰭上方に第四は尾柄上にあり。本種は約 300 耗に達し本州南方海岸岩礁多き附近に棲息す。

ハ　　オ　　コ　　ゼ
Hypodytes rubripinnis (Temminck & Schlegel)
（第四十三圖版　第四圖） ×1
D. XIV, 7; A. III, 4 to 5; 側線孔 20.
體長は頭長の3倍、體高の $2\frac{1}{4}$ 倍なり。頭長は主上顎骨の $2\frac{3}{4}$ 倍、眼徑の $3\frac{1}{2}$ 倍なり。體は長橢圓形にして側扁し、體の後方のみ皮下に埋沒せる小鱗を有す。兩顎鋤骨及び口蓋骨に絨毛齒の頂帶あり。眼前部に2棘あり。

鰐蓋骨に2棘、前鰐蓋骨に4棘あり。背鰭は眼の上部より始まる。背鰭の棘部と軟條部間に缺刻なし。體色背部は赤く不規則なる濃褐色の斑紋あり。腹部は白し。體長70 耗前後なり。東京より九州に至る海岸に産す。本種は海岸の海藻間或は岩礁間に棲息す。背鰭棘基底に毒腺を有す。食用に供せず。

ミ　　ノ　　カ　　サ　　ゴ
Pterois lunulata Temminck & Schlegel.
（第四十三圖版　第五圖） × $\frac{1}{2}$
D. XIII, 12; A. III, 8; scales 39.
體長は頭長の $2\frac{1}{3}$ 倍、體高の3倍なり。頭長は主上顎骨の $2\frac{1}{3}$ 倍、眼徑の5倍なり。體は稍延長し、側扁せり。兩顎及び鋤骨に絨毛齒あるも口蓋骨には齒なし。頭には多くの棘を有し、鰐蓋骨に1棘、前鰐蓋骨に3棘と其の下に甚だ小なる1棘あり。背鰭は甚だしく延長し細長く且鋭く、鰭膜は基底にのみ存せり。胸鰭甚だ延びて絲狀をなし其尖端は尾鰭基底を超えて延長せり。體は帶赤黃色にして多くの狭き暗褐色の横帶あり。背鰭の各棘は3乃至4個の大なる暗點あり。胸鰭の各軟條は數個の暗點ありて、腹鰭には 3 乃至 4 條の明瞭なる暗線あり。體長300 耗に達し、東京より長崎に至る浅海に多し。背鰭棘基底には毒腺を有せり。

ア　　イ　　ナ　　メ
Hexagrammos otakii Jordan & Starks
（第四十三圖版　第六圖） × $\frac{1}{2}$
D. XIX to XX, 22; A. 21 to 23; scales 107 to 112.
體長は頭長の $2\frac{3}{4}$ 倍、體高の $4\frac{1}{4}$ 乃至 $4\frac{1}{2}$ 倍なり。頭長は主上顎骨の $2\frac{4}{5}$ 倍乃至3倍、眼徑の $4\frac{3}{5}$ 倍なり。體は長橢圓形にして、稍側扁せり。兩顎には中等大の圓錐形の齒帶を有し、外列は稍肥大せり。兩顎齒は稍不等なり。鋤骨には小齒あれども口蓋骨には無し。眼の上方には短き觸手狀の一突出物あり。又頂部に1對あり。背鰭の棘部及び軟條間の缺刻は深からず。側線5條ありて上方より數へてその第五線は胸部に於て合せず。第四線は二又せず又腹鰭の先端に達せず。體は背部帶緑褐色にして下方淡く、背部及び體側には四角形の黒褐色の斑紋あり。背鰭、胸鰭、臀鰭、及び尾鰭には不規則なる黒褐色の斑紋あり。體長250 耗に達す。北海道より九州に至る淺き内灣に多し。冬期産卵す。春季甚だ美味なり。

オ　　ニ　　オ　　コ　　ゼ
Inimicus japonicus (Cuvier & Valenciennes)
（第四十三圖版　第七圖） × $\frac{2}{3}$
D. XVII, 7; A. II, 9; 側線部の觸手狀突起 15.
體長は頭長の3倍、體高の $5\frac{1}{2}$ 倍なり。頭長は主上顎骨の $2\frac{3}{4}$ 倍、眼徑の7倍なり。體は稍長く、頭は縦扁して奇態を呈せり。眼窩輪縁骨及び主上顎骨は甚だしく突出せり。體は無鱗にして滑かなる皮膚を有す。頭、軀幹及び諸鰭には皮質觸手狀突起あり。口は稍垂直にして、鋤骨には齒あるも口蓋骨に無し。背鰭棘細長く、前3棘は分離し、後方の棘とは基底に於て鰭膜に依りて、聯絡せり。體色は環境に依りて大いに異る。即ち浅海の岩礁或は海底に棲むものは普通黒く、紅藻間に棲息するものは鮮赤色、深海に住むものは黃色なり。東京より九州に至る浅海に多し。味甚だ美なり。背鰭棘基底に毒腺を有す。

Sebastiscus marmoratus (Cuvier & Valenciennes)
“ Kasago ”
PL. XLIII, fig. 1. × $\frac{1}{2}$

D. XII, 12; A. III, 5; pores in lateral line 46.
Length of body equal to $2\frac{2}{3}$ times that of head, and to $2\frac{5}{6}$ times depth of body; length of head $2\frac{1}{4}$ times that of maxillary, and $4\frac{1}{4}$ times diameter of eye. Body rather thick. Maxillary reaching to below posterior margin of eye; jaws equal; symphyseal knob of mandible small; jaws with rather wide bands of teeth, but narrow on vomer and palatines. Ridges of occiput high. Pre-orbital with 3 spines. Scales on top of head ctenoid. Peritoneum white air-bladder present. Body reddish-brown, lighter below; there are 5 reddish-yellow spots along back at base of dorsal fin; body covered with many small bluish spots; similar spots on dorsal, anal and pectoral fins; caudal spots whitish. The fish attains a length of 240 mm.; rather common round rocky places from Hokkaido to Kyusyu. This species is viviparous, the young being born alive in the Winter, they are small in size and their number at a birth is fairly large. It is carnivorous in habit, and its colouration and markings vary with the surroundings, simulating the rocks and weeds among which it lives

Scorpaena fimbriata Döderlein
“ Fusakasago ”
PL. XLIII, fig. 2. × $\frac{1}{2}$

D. XII, 10; A. III, 6; scales 40.
Length of body equal to $2\frac{1}{3}$ times that of head, and to $2\frac{1}{2}$ times depth of body; length of head equal to $2\frac{1}{3}$ times that of maxillary, and to 4 times diameter of eye. Body rather thick. Jaws equal with narrow bands of teeth; palatines and vomer with narrower bands; lower jaw has small knob at symphysis. Spines of cranium very sharp. Inter-orbital space narrow and deeply concave; large tentacle on supra-ocular ridge. Peritoneum white. Pectoral fin reaches just over vent. Body reddish-brown, with irregular marks on back which continue on spinous dorsal; there is a large black blotch on posterior half of spinous dorsal. It attains to 300 mm. in length; rather common everywhere in Tokyo Bay.

Sebastichthys elegans (Steindachner & Döderlein)
“ Moyo ”
PL. XLIII, fig. 3. × $\frac{1}{2}$

D. XIII, 12; A. III, 7; pores of lateral line 30.
Length of body equal to $2\frac{1}{2}$ times that of depth of body, and to 2 times that of head. Mouth rather large, the maxillary reaching nearly to below posterior border of eye. Teeth in moderate bands. Interorbital deeply concave, the supraorbital edges raised. Near middle of interorbital are 2 curved longitudinal ridges, between which runs a very narrow deep canal. Scales weekly ctenoid. Colour of body gray much mottled with darker and with flesh colour. Body with 4 diffuse dark cross bands, first at shoulder, second behind pectoral, third narrower, fourth at base of caudal. This species is live in rocky shores in southern coasts of Japan.

Hypodytes rubripinnis (Temminck & Schlegel)
“ Haokoze ”
PL. XLIII, fig. 4. ×1

D. XIV, 7; A. III, 4 to 5; pores of lateral line 20.
Length of the body equal to 3 times that of head, and to $2\frac{1}{4}$ times depth of body; length of head equal to $2\frac{3}{4}$ times that of maxillary, and to $3\frac{1}{2}$ times diameter of eye. Body oblong, compressed, covered with minute embedded scales at its posterior part. Jaws, vomer and palatines

with broad bands of villiform teeth. Pre-orbital and opercle with two spines; and pre-opercle with 4. Dorsal fin begins forward, first spine being inserted above eye; dorsals without notch between spinous and soft parts. Body red above, mottled with irregular deep-brownish blotches; belly whitish. It attains to 70 mm. in length; found very abundantly from Tokyo to Kyusyu, living among weeds on rocky shores. Dorsal spines are provided with venom glands.

Pterois lunulata (Temminck & Schlegel)
“ Minokasago ”
PL. XLIII, fig. 5. × $\frac{1}{2}$

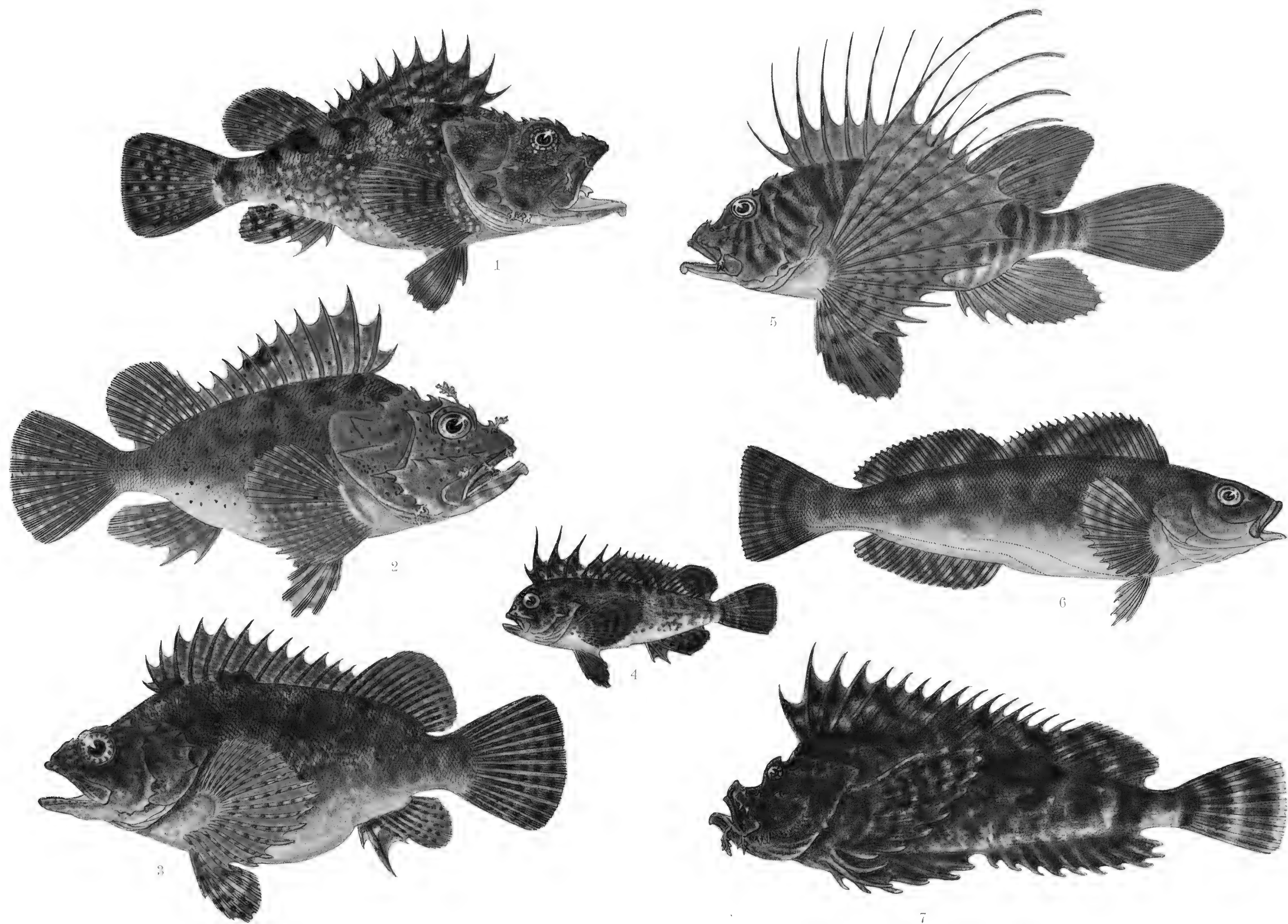
D. XIII, 12; A. III, 8; scales 39.
Length of body equal to $2\frac{1}{3}$ times that of head, and to 3 times depth of body; length of head equal to $2\frac{1}{3}$ times that of maxillary, and to 5 times diameter of eye. Body rather elongated and compressed. There are villiform teeth in jaws and on vomer, but none on palatines. Head well armed with spines; opercle with a spine; pre-opercle with 3 spines and a rudimentary one below. Dorsal fin elevated, slender, sharp, and continued by membrane only at base; pectoral fin greatly elongated, filamentous, reaching beyond base of caudal. Body reddish-orange, crossed with many narrow dark-brown bars; each dorsal spine with 3 or 4 large dark spots; each ray of pectoral with several large spots; rays of ventral fins crossed by 4 or 5 distinct dark bars. It attains to 300 mm. in length; rather common from Tokyo to Nagasaki. This fish very dangerous on account of the stings inflicted by their dorsal spines which are provided with poison glands at base.

Hexagrammos otakii Jordan & Starks
“ Ainame ”
PL. XLIII, fig. 6. × $\frac{1}{2}$

D. XIX to XX, 22; A. 21 to 23; scales 107 to 112.
Length of body equal to $3\frac{3}{4}$ times that of head, and to $4\frac{1}{4}$ to $4\frac{1}{2}$ times depth of body; length of head equal to $2\frac{4}{5}$ to 3 times that of maxillary, and to $4\frac{3}{5}$ times diameter of eye. Body oblong, somewhat compressed. Jaws with bands of moderate size, consisting of conical teeth, outer ones enlarged; vomer with small teeth but palatine toothless. Short fringed flap above eye, and a pair of small tentacles on nape. Notch between spines and rays of dorsal fin not deep. There are a five lateral lines, the fifth, counting from above, not joining its fellow at the middle of breast, the fourth not forked nor extending past tips of ventral fins. Body greenish-brown above, paler below, marked on the back and sides with blackish-brown blotches of moderate size; dorsal, pectoral, anal and caudal fins are mottled with irregularly shaped dark-brown blotches. It attains to 250 mm. in length; rather common from Hakodate to Kyusyu, living on the shallow coasts. Spawns in Winter; its flesh very delicious in Spring.

Inimicus japonicus (Cuvier & Valenciennes)
“ Oniokoze ”
PL. XLIII, fig. 7. × $\frac{2}{3}$

D. XVII, 7; A. II, 9; lateral line tentacle 15.
Length of body equal to 3 times that of head, and to $3\frac{1}{2}$ times depth of body; length of head equal to $2\frac{3}{4}$ times that of maxillary, and to 7 times diameter of eye. Body rather elongated; head depressed and fantastically formed; orbital rim and premaxillary process much produced. Body without scales, covered with smooth skin; body, head, and fins with skinny flaps. Mouth subvertical. Vomer with teeth, but none on palatines. Dorsal spines slender, 3 anterior spines separated from the rest, the other spines connected at base by membrane. Body usually black in specimens taken from rocky and muddy shallow bays, but bright-red when found among red algae, and yellowish in deep waters. Rather common in shallow bays from Tokyo to Kyusyu. Highly esteemed as food. Dorsal spines provided with virulent poison gland at base.





ハリカジカ

Myxocephalus polyacanthocephalus (Pallas)

（第四十四圖版 第一圖）×1⁄2

D. IX to X, 13 to 16; A, 11 to 13.

體長は頭長の21⁄2倍、體高の41⁄2倍にして頭長は眼徑の61⁄2倍、吻長の21⁄3倍なり。體は強壯にして稍紡錘形をなし厚き皮膚にて覆はる。頭は長く稍側扁し眼隔は凹形をなす。眼縁は隆起し、下顎は上顎より短かし、吻は稍長く尖り、鼻棘は長し。眼の後部に側偏せる鈍き1棘あり。背鰭は中等に高く、背棘は細長なり。頭頂部の皮膚は薄く、小疣狀物あり。口は稍大にして、上顎骨は眼の後縁下に達す。體は緑青色にして下部淡し。體側上部には不規則なる斑紋あり。鰭には各數條の褐色帶あり。寒帯の海洋に産し、北日本南部にも及ぶ。

イネゴチ

Thysanophrys crocodilus (Tilesius)

（第四十四圖版 第二圖）×1⁄2

D. VII to VIII, 11; A. 11; scales 90.

體長は頭長の3倍、體高の9倍にして頭長は眼徑の41⁄2倍、吻長の22⁄3倍なり。體は延長縦扁し、頭部は殊に然り、頭に棘を有し、眼上縁には約6個の鋸齒あり。眼下縁には3個の離棘を有し、其第一棘は眼窩の後方に第二棘は瞳孔の前方下部に、第三棘は鼻孔の後部と對す。鰓蓋の上部には2個の滑縁ありて其の後端は短く鈍き棘をなす。兩顎齒は絨毛狀にして鋤骨にも齒帶あり、犬齒無し。體は綠褐色にして下部は淡く、體上部及び頭部には暗色の小點あり。軟背鰭には明瞭なる斑點あり。臀鰭及び尾鰭には薄き斑點を有す。砂泥質の淺所に棲息す。

ホウボウ

Chelidonichthys kumu (Lesson & Garnot)

（第四十四圖版 第三圖）×1⁄2

D. II, 16; A. 15 to 16.

體長は頭長の31⁄3倍、體高の51⁄3倍にして、頭長は

眼徑の41⁄2倍、吻長の21⁄3倍なり。體は延長し稍紡錘形をなす。吻は寧ろ長く其の前方は凹形をなし、眼隔間は凸形をなす。眼の前方には短く強き2棘を有し、眼の後方及び頭部の棘は背鰭前部に達せず。鱗は小なり、體紅色にして下部は淡く、體側上部には不規則なる暗色斑紋あり。南日本に産し、美味なり。

コチ

Platycephalus indicus (Linné)

（第四十四圖版 第四圖）×1⁄2

D. VIII, 13; A. 13; scales 120.

體長は頭長の31⁄2倍、體高の9倍にして、頭長は眼徑の7倍、吻長の31⁄2倍なり。體は延長縦扁し。殊に頭部縦扁す。眼上、後頭骨、肩胛骨、及び前鰓蓋骨の隆起は低く、棘及び鋸齒を有せず。前眼窩角の前方に鈍き一棘あり。前鰓蓋骨は強き棘に終り、兩顎齒は絨毛帶をなし、鋤骨には犬齒狀の小齒あり。口蓋には1列の顯著なる犬齒あり。鱗は小にして櫛狀をなす。體綠褐色にして兩背鰭には暗色點あり。尾鰭には淡き斑點あり。砂底質の淺所に棲息し、殊に九州に多産す。夏期美味なり。

ソコホウボウ

Pterygotrigla hemistieta (Temminck & Schlegel)

（第四十四圖版 第五圖）×1⁄2

D. VIII, 10; A. I, 11; scales 105.

體長は頭長の22⁄3倍、體高の41⁄2倍にして、頭長は眼徑の3倍、吻長の21⁄3倍なり。體は稍延長側扁す。前部外廓は急斜し、吻端より眼に至りて直線をなす。上眼窩縁は突出し、眼隔は廣く凹形にして、其の中は略眼徑と等し。上顎骨は眼の中間下に達し、體の各側には1個の鼻棘あり。兩顎齒は狹帶をなし、前眼窩縁は鋸齒狀をなす。顴頭骨には1銳棘ありて後方に向ふ。鰓蓋骨にも長さ1棘あり。體は暗紅色にして下部淡し。第1背鰭に明瞭なる暗色斑紋あり。稍深所に棲息す。

ホシセミホウボウ

Daicocus peterseni (Nystrom)

（第四十四圖版 第六圖）×1⁄2

D. I, VI, 8; A. 6; scales 46.

體長は頭長の31⁄3倍、體高の5倍にして、頭長は眼徑の32⁄3倍、吻長の21⁄2倍なり。體は延長縦扁し、腹部は扁平なり。背部は僅かに上昇す。頭部強固にして、縦扁し、眼隔間は凹形をなす。後頭部には絲狀の一刺ありて、背棘の後方に達す。胸鰭は長く其の端は尾鰭基底を越ゆ。兩顎齒は粒狀にして鋤骨及び口蓋に齒なし。鱗は骨質にして強く尖る。側線なし。體暗紅色にして下部淡く、胸鰭内表面は綠色にして多數の褐色點あり。外海性なれど飛魚の如く水上を飛躍せず。稀に漁獲さる。

アサヒアナハゼ

Pseudoblennius cottoides (Richardson)

（第四十四圖版 第七圖）×1

D. X, 19; A. 17; pores in lateral line 42.

體長は頭長の21⁄2倍、體高の41⁄4倍にして、頭長は眼徑の41⁄2倍、吻長の31⁄2倍なり。體は稍延長側扁し。背部は上昇せず。頭は中等大にして外廓は強く彎曲し、吻は短く、外廓は急なり。口は稍大にして、上顎骨は漸く眼の後縁に達す。下顎の邊縁は眼下鼻と對し、其の前縁下には小棘あり。鱗を以て覆はる。體褐色にして下部淡く、體側には約八個の長橢圓形の暗色斑あり。軟背鰭臀鰭及び尾鰭には數條の暗色帶あり。沿岸性の小魚なり。

アカゴチ

Bembras japonicus Cuvier & Valenciennes

（第四十四圖版 第八圖）×1⁄2

D. XI, 12; A. 12; scales 80.

體長は頭長の21⁄3倍、體高の7倍にして、頭長は眼徑の41⁄4倍、吻長の21⁄3倍なり。體は延長縦扁し。背部は上昇せず。並は稍大にして縦扁し、其外廓は強く彎曲

をなす。眼は中等大にして、吻は長く尖る。兩顎は稍等長なり。上顎骨は眼の前縁下に達す。體は鮮紅色をなし。體側上部には2餘の暗褐色斑點排列す。第一背鰭には1列の黒點あり。尾鰭基底には1個の大なる斑點を有す。胸鰭及び臀鰭は紅色なり。中等大にして南日本に産す。

カナガシラ

Lepidotrigla strauchi Steindachner

（第四十四圖版 第九圖）×1⁄2

D. VIII to IX, 15 to 1; A. 15 to 17; scales 65.

體長は頭長の32⁄3倍、體高の41⁄2倍にして、頭長は眼徑の31⁄2倍、吻長の21⁄4倍なり。體延長し、稍紡錘形をなす。頭部外面は骨質性にして粗き骨狀板を以て覆はれ、時に棘を有す。吻は中等に窪み、側突起は短く銳し、前鰓蓋骨の棘は甚だ小にして、頭棘は第2背棘の基部に達し、鰓蓋棘は第5背棘の基部に至る。上轉棘は長く銳くして、第5背棘の基底に及ぶ。體は暗紅色にして下部淡く、鰭は紅色なり。第四及び第七背棘間に深紅色の1斑紋あり。味は助鰭に稍劣る。近海砂底に棲息す。

コバンイタダキ

Leptecheneis naucrates (Linné)

（第四十四圖版 第十圖）×1⁄2

D. XXIII, 37; A. 37.

體長は頭長の51⁄4倍、體高の121⁄3倍にして頭長は眼徑の62⁄3倍、吻長の2倍なり。體は延長し、細長なり。頭は稍小にして上部縦扁す。吻は寧ろ長く尖り、下顎は突出す。兩顎齒は絨毛帶をなし、鋤骨、口蓋骨、舌にも同様の齒あり。背鰭は長く多數の薄板を有す。鱗は小にして圓形、體綠褐色にして下部淡く、1條の黒色帶は體の中間を通りて顎頂より尾鰭後縁に達す。背鰭を以て他の魚類等に吸着し、遠距離を游行す。食用に供せず。

Myxocephalus polyacanthocephalus (Pallas)

“Harikazika”

PL. XLIV, fig. 1. $\times \frac{1}{2}$

D. IX to X, 13 to 16; A. 11 to 13.

Length of body $2\frac{1}{2}$ times that of head, and $4\frac{1}{4}$ times depth of body. Length of head $6\frac{1}{2}$ times diameter of eye, and $2\frac{4}{5}$ times length of snout. Body robust, sub-fusiform, covered with thick skin, head long and narrow, somewhat compressed, concave between the orbits, the orbital rim being elevated; lower jaw included. Snout rather long, pointed; nasal spines strong; a strong ridge above eye, with a blunt compressed spine behind it. Dorsals not very high; dorsal spines slender. Skin of top of head thin, with small, smooth warts, not hiding the occipital ridges; no cirri. Mouth rather large, maxillary reaching beyond eye. Body bluish olive, much lighter below. Upper parts of body irregularly blotched; all the fins with several brown bands of irregular shape. A common sea fish of Arctic region, its range extending to northern Japan.

Thysanophrys crocodilus (Tilesius)

“Inegoti”

PL. XLIV, fig. 2. $\times \frac{1}{2}$

D. VII to VIII, 11; A. 11; scales 90.

Length of body 3 times that of head, and 9 times depth of body. Length of head $4\frac{1}{2}$ times diameter of eye, and $2\frac{2}{3}$ times length of snout. Body elongated, and depressed; head especially so, and moderately armed; superciliary ridges each with about 6 low spine-like serratures, all behind middle of eye; infra-orbital ridge with 3 distant spines, one under back of orbit, one below anterior third of pupil, and a third nearly opposite posterior nostril; upper part of opercle with 2 low smooth ridges, each ending in a short blunt spine. Jaws with bands of fine villiform teeth; vomerine bands also present; no canine teeth. Colour bluish brown, much lighter below; upper parts of body and head with small dark spots; soft dorsal distinctly spotted; anal as well as caudal faintly spotted. This fish haunts shallow sandy bottoms.

Chelidonichthys kumu (Lesson & Garnot)

“Hôbô”

PL. XLIV, fig. 3. $\times \frac{1}{2}$

D. IX, 16; A. 15 to 16.

Length of body $3\frac{1}{3}$ times that of head, and $5\frac{1}{4}$ times depth of body. Length of head $4\frac{1}{2}$ times diameter of eye, and $2\frac{1}{5}$ times length of snout. Body elongated, somewhat fusiform. Snout rather long, with an evident emargination in front, the angles serrated and produced over the maxil-

laries; inter-orbital space concave. Two short but strong pre-ocular spines, a low post-ocular spine and a nuchal spine not reaching to front of dorsal. Scales small, no long shields along lateral line. Colour bright reddish, much lighter below; upper part of body irregularly marbled with dark dusky colour. An excellent food fish in southern Japan.

Platycephalus indicus (Linné)

“Koti”

PL. XLIV, fig. 4. $\times \frac{1}{2}$

D. VIII, 13; A. 13; scales 120.

Length of body $3\frac{1}{5}$ times that of head, and 9 times depth of body. Length of head 7 time diameter of eye, and $3\frac{1}{2}$ times length of snout. Body elongated and depressed. Head broad and extremely depressed, being smooth or scarcely armed. Super-ciliary, parieto-occipital, scapular and pre-opercular ridges low, none of which provided with any spines or serratures; a low blunt spine with a broad base in front of the upper anterior orbital angle; pre-operculum ending in two robust spines; a tongue-like flap on the opercular membrane under the pre-opercular spines; jaws with villiform teeth in broad bands; vomer with small canine-like teeth in a crescent band, which is placed at right angles to the shaft of the bone; palatines with a single row of canine-like teeth most prominently. Scales small, ctenoid. Colour bluish brown; two dorsal fins dark-spotted; caudal fin slightly spotted, and other fins all plain. A sandy shore fish, very abundant in Kyusyu. Being the flesh very delicious in Summer, so the fish is treated as one of the choicest fishes.

Pterygotrigla hemisticta (Temminck & Schlegel)

“Sokohôbô”

PL. XLIV, fig. 5. $\times \frac{1}{2}$

D. VIII, 10; A. I, 11; scales 105.

Length of body $2\frac{3}{4}$ times that of head, and $4\frac{1}{2}$ times depth of body. Length of head 3 times diameter of eye, and $2\frac{4}{5}$ times length of snout. Body rather elongated, and compressed. Anterior profile steep and straight from eyes to tip of snout. Supra-orbital rim produced; inter-orbital broad and concave, its width equal to diameter of eye. Maxillary reached to below middle of eye. A single rostral spine on each side. Teeth in jaws in very narrow bands. Edge of pre-orbital finely serrated, the serrae extending along outer edge of rostral spine. A sharp spine is directed backwards from temporal region, and a very long one from opercle continued as a ridge anteriorly nearly across opercle. Body brick red, much lighter below, a distinct large dark blotch on first dorsal fin. Rather a deep-sea fish.

Daicocus peterseni (Nyström)

“Hosi-samihôbô”

PL. XLIV, fig. 6. $\times \frac{1}{2}$

D. I, VI, 8; A. 6; scales 46.

Length of body $3\frac{1}{5}$ times that of head, and 5 times depth of body. Length of head $3\frac{2}{5}$ times diameter of eye, and $2\frac{1}{2}$ times length of snout. Body elongated, and depressed, belly flattened; back slightly elevated. Head robust, broad and depressed, squarish in transversal section; inter-orbital space concave. A long filamentous ray on occiput, its tip reaching to the back of the continuous spinous dorsal; spinous dorsal not preceded by a short detached ray, directly in front of its base; pectorals elongated, their tips reaching beyond base of caudal; caudal emarginated. Jaws with granular teeth; no teeth on vomer or palatines. Scales bony, strongly keeled; on lateral line. Colour brick red, lighter below; inner surface of pectoral bluish, profusely adorned with light brown spots; each of these spots surrounded with much darker ring. A bright pelagic fish. Not consumed as food.

Pseudoblennius cottoides (Richardson)

“Asahi-anahaze”

PL. XLIV, fig. 7. $\times 1$

D. X, 19; A. 17; pores in lateral line 42.

Length of body $2\frac{1}{5}$ times that of head, and $4\frac{1}{4}$ times depth of body. Length of head $4\frac{1}{2}$ times diameter of eye, and $3\frac{1}{2}$ times length of snout. Body rather elongated, compressed, its back not elevated. Head moderately large, with strongly curved profile; snout shortish, with steeply inclined profile. Mouth rather large; maxillary scarcely reaching to posterior border of eye. Edge of lower jaw opposites at the end of sub-orbital stay and a very small spine hooked forward at its lower anterior edge, completely covered by the skin. Skin scaleless. Colour brownish, lighter below; about 8 dark oblong blotches along the sides of body; soft dorsal, anal and caudal with several darker lines. A small shore fish, disporting itself near tide marks.

Bembras japonicus Cuvier & Valenciennes

“Akagoti”

PL. XLIV, fig. 8. $\times \frac{1}{2}$

D. XI, 12; A. 12; scales 80.

Length of body $2\frac{2}{5}$ times that of head, and 7 times depth of body. Length of head $4\frac{1}{4}$ times diameter of eye, and $2\frac{1}{5}$ times length of snout. Body elongated and depressed, its back not elevated. Head rather large, depressed, with broadly curved profile; eye moderately large, snout longish,

pointed. Jaws sub-equal, maxillary extending to below anterior rim of eye. Colour clear red; there are two rows of dark brown spots on upper part of body; first dorsal with a row of blackish spots; caudal with a large spot near its base; other fins uniformly reddish. A handsome fish of southern Japan.

Lepidotrigla strauchi Steindachner

“Kanagasira”

PL. XLIV, fig. 9. $\times \frac{1}{2}$

D. VIII to IX, 15 to 17; A. 15 to 17; scales 65.

Length of body $3\frac{2}{5}$ times that of head, and $4\frac{1}{2}$ times length of snout. Body elongated, somewhat fusiform; head externally bony, entirely cuirassed with rough, bony plates, some of which are armed with spines. Snout moderately emarginated, the lateral prominences short and sharp, consisting of a single spine on each side. Pre-ocular spines very small; nuchal spine reaching past the base of second dorsal spine; opercular spine extending on anterior fifth of base of humeral spine; humeral spine long and sharp, reaching to the base of fifth dorsal spine. Colour bright brick-red above, much lighter below; fins red; a deep red blotch on the spinous dorsal between the fourth and seventh spines. An abundant food fish, but a little inferior in quality to *Chelidonichthys kumu*.

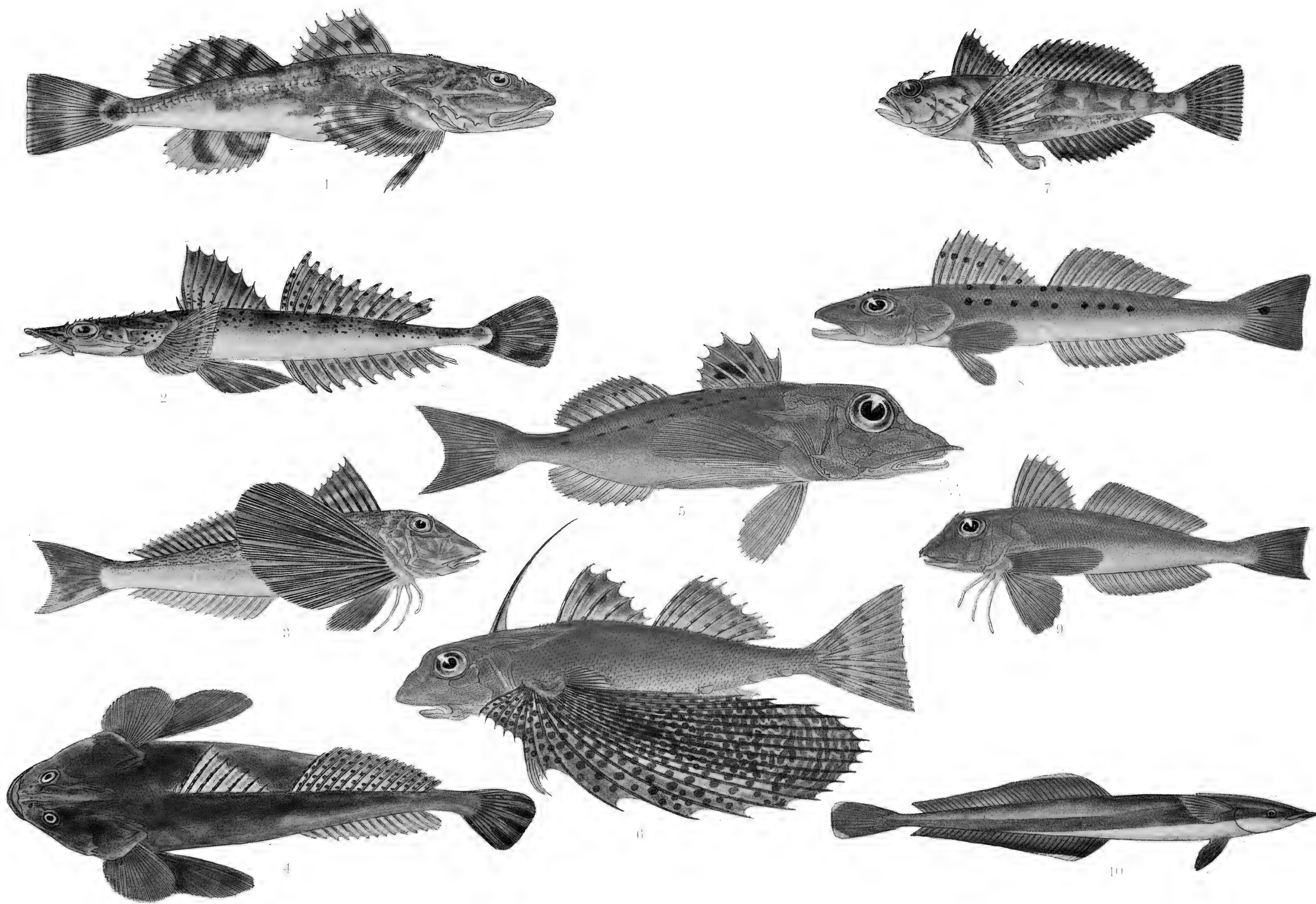
Leptecheneis naucrates (Linné)

“Koban-itadaki”

PL. XLIV, fig. 10. $\times \frac{1}{2}$

D. XXIII, 37; A. 37.

Length of body $5\frac{1}{5}$ times that of head, and $12\frac{1}{2}$ times depth of body. Length of head $6\frac{2}{3}$ times diameter of eye, twice length of snout. Body elongated, slender, sub-terete, gradually tapering towards caudal peduncle, where it is also sub-terete. Head rather short, depressed above; snout rather long, acutely pointed, lower jaw produced. Angle of mouth situated in vertically through anterior nostril. Teeth in jaws villiform, in a rather wide band, leaving a median narrow toothless strip in the lower jaw; similar teeth on vomer, palatines and tongue. Dorsal disc elongated, with many pairs of laminae. Scales very small, cycloid. Colour bluish brown, lighter below; a broad blackish band extends from tip of jaws through eye, passing along middle of body, to the posterior margin of caudal. By means of the dorsal disk this fish attaches itself to other fishes or drifting objects, and carried away for great distances without any movement by itself. Generally not used as food.



ババガレヒ
 <div>Microstomus stelleri Schmidt</div>
<div>（第四十五圖版　第一圖）　× 1/2</div>
D. 90；A. 73；scales 125.
<p>體長は頭長の4 3/8倍、體高の2 1/2倍にして、頭長は眼徑の4 1/6倍、吻長の3 1/8倍なり、體は長橢圓形にして側扁し、頭部は稍小に其の背面は眼の前方に於て僅に凹む、上眼は下眼より僅に後方にありて接近し、眼隔間は稍廣く、吻は短くして尖れり、上顎骨は眼の前方に達す、背鰭は上眼瞳孔の前部上方に始まり、臀鰭は胸鰭基底の僅に下端に始まる、鱗は稍小にして圓形、眼隔間及吻は裸なり、側線は前部に於て僅に彎曲し、體色は褐色にして黒褐色の不鮮明なる縦紋あり、北日本に産し味佳ならず。</p>

ヒラメ
 <div>Paralichthys olivaceus (Temminck & Schlegel)</div>
<div>（第四十五圖版　第二圖）　× 1/4</div>
D. 80；A. 61；側線孔 95.
<p>體長は頭長の3 1/4倍、體高の2 1/10倍なり、頭長は吻長の5 1/2倍、眼徑の6倍なり、體高稍高く、眼は右側にあり、口裂は斜にして、下顎は上顎よりも突出せり、主上顎骨は眼の後縁下に達す、上顎齒は2列に並び、下顎齒は側方に於て1列、前方に於て2列なり、側線の彎曲は稍低し、背鰭は上眼の瞳孔前方上に始まる、臀鰭棘弱し、鰓耙は短く肥厚す、體は褐色にして背鰭に6乃至7個、臀鰭に5乃至6個の大なる黒褐色圓點ありて是等の黒點は鰭の先端に達せず、尾鰭基底には著しく同様の二黒點あり、體長3.0耗に達す、松島以南の南日本に饒産す、沿岸魚にして春季淺き内灣に來りて産卵す。</p>

オヒョウ
 <div>Hippoglossus stenolepis Schmidt</div>
<div>（第四十五圖版　第二圖）　× 1/6</div>
D. 95；A. 74.
<p>體長は頭長の4 1/2倍、體高の3 3/10倍なり、頭長は吻長の2倍、眼徑の8 1/2倍なり、體は稍延長し、眼は右側にあり、齒は大きく、上顎齒は2列、下顎齒側方に於て1列、前方は2列なり、背鰭は瞳孔の前方上部に始まり、背鰭の中部軟條は長大なり、尾鰭後縁は半月形を呈す、鱗は甚だ小なり、側線は前方に於て強く彎曲し、附屬枝なし、體色は黄褐色にして美觀なり、全長1.5米に達す、北日本に多く殊にオホツク海に饒産す、夏期産卵す、肉は美味なり。</p>

マツカワ
 <div>Verasper moseri Jordan & Gilbert.</div>
<div>（第四十五圖版　第四圖）　× 1/6</div>
D. 82；A. 58；scales 84.
<p>體長は頭長の3 1/8倍、體高の2倍なり、體高高く硬き鱗を有す、眼は右側にあり、口は稍小にして、上顎齒は2列に並び、下顎齒は側方に於て1列、縫合部は數列に並べり、鰓耙は短く且肥厚せり、側線は前方に於て短き半圓形に彎曲す、背鰭は瞳孔の上方に始まる、體は暗灰色にして奇鰭には鰭條と平行せる著しき太き黒線あり、體の左側は雄にては黄色、雌にては白色なり、體長1米に達す、北海道より茨城縣に亘りて饒産す、雄は雌より美味にして殊に冬期美味なり。</p>

ヒラメ
 <div>Paralichthys olivaceus (Temminck & Schlegel)</div>
<div>（第四十五圖版　第五圖）　× 1/4</div>
D. 72；A. 57；scales 120.
<p>體長は頭長の3 3/4倍、體高の2 1/9倍なり、頭長は吻長の4 1/4倍、眼徑の7 1/2倍なり、體は長橢圓形にして、眼は左側にあり、口は大きく、斜位にして下顎先端は截形にして殆ど垂直なり、齒は鋭く、細長く、大きさ多少不等にして不規則なる形をなして1列に並び、前方　齒は多少肥大せり、鋤骨及び口蓋骨に齒なし、背鰭は眼の前方に始まる、附屬側線枝あり、體色灰褐色にして暗褐及白斑ありて、是等の斑紋は幼魚に於て著しく、老魚には不明なり、體長800耗に達す、日本各地の沿岸に普通なるも特に北海道南部より東京に亘りて饒産す、五一六月頃の産卵時期に至れば淺海に移動し來る、一尾の産卵數 500000 に達す、肉はヒラメ科中最も美味なり。</p>

ムシガレヒ
 <div>Xystrias griorjewi (Herzenstein)</div>
<div>（第四十五圖版　第六圖）　× 1/8</div>
D. 86；A. 23；scales 92.
<p>體長は頭長の3 1/8倍、體高の2 1/8倍あり、頭長は眼徑の4倍、吻長の5 1/2倍なり、體は幾分延長し、背鰭外縁は腹鰭より稍凸形をなす、口は廣くして傾く、兩顎齒は小に前方に至るに従ひて長く、上顎に2列、下顎に1列あり、眼隔間は狭く凸形をなし眼徑の 1/8倍なり、側線は胸鰭上部に於て彎曲し、其の彎曲の長さは胸鰭の長さに等し、鱗は小さく、楕形をなす、體は褐色にして側線の上に3個、下方に3個の鮮明なる黒點を排列し、鰭には黒點なし、我國各地の沿岸に産し重要なり。</p>

Microstomus stelleri Schmidt
 <div>“Bab̄-garei”</div>
PL. XLV, fig. 1.　　× 1/2
D. 90；A. 73；scales 125.
Length of body 4 1/8 times that of head, 2 1/2 times depth of body. Head 4 1/6 times diameter of eye, 3 1/8 times length of snout. Body oblong, compressed；head rather small, its dorsal profile a trifle notched at front of eye；upper eye slightly posterior to lower, situated near profile；inter-orbital rather wide；snout short, pointed. Maxillary reaching to front of eye. Dorsal beginning above anterior rim of pupil of upper eye；anal beginning slightly before lower end of base of pectoral. Scales rather small, cycloid；inter-orbital and snout scaleless. Lateral line with a low arch anteriorly. Colour brownish, but indistinctly mottled with dark-brown. A fish of northern Japan. Although abundantly caught this fish is not good as food.

Verasper variegatus (Temminck & Schlegel)
 <div>“Hosi-garei”</div>
PL. XLV, fig. 2.　　× 1/8
D. 80；A. 61；pores in lateral line 95.
Length of body equal to 3 1/8 times that of head, and to 2 1/6 times depth of body；length of head equal to 5 1/2 times that of snout, and to 6 times diameter of eye. Body rather deep, eyes and colour dextral；mouth oblique, lower jaw projecting beyond upper；maxillary reaching to below posterior margin of eye；teeth arranged in two rows in upper jaw, one row on sides of lower jaw, but the other in front of it. Arch of lateral line rather low. Dorsal fin inserted above front of pupil of upper eye；anal spine weak. Gill rakers short and thick. Body dark-brown；dorsal fin with 6 or 7 large, dark brown spots, and 5 or 6 similar spots on anal；these spots not reaching to edge of fin；two large conspicuous spots at base of caudal. It attains to 300 mm. in total length. Rather common in southern Japan, ranging north to Matusima Bay. A littoral fish, Spawning in late Spring in shallow bays.

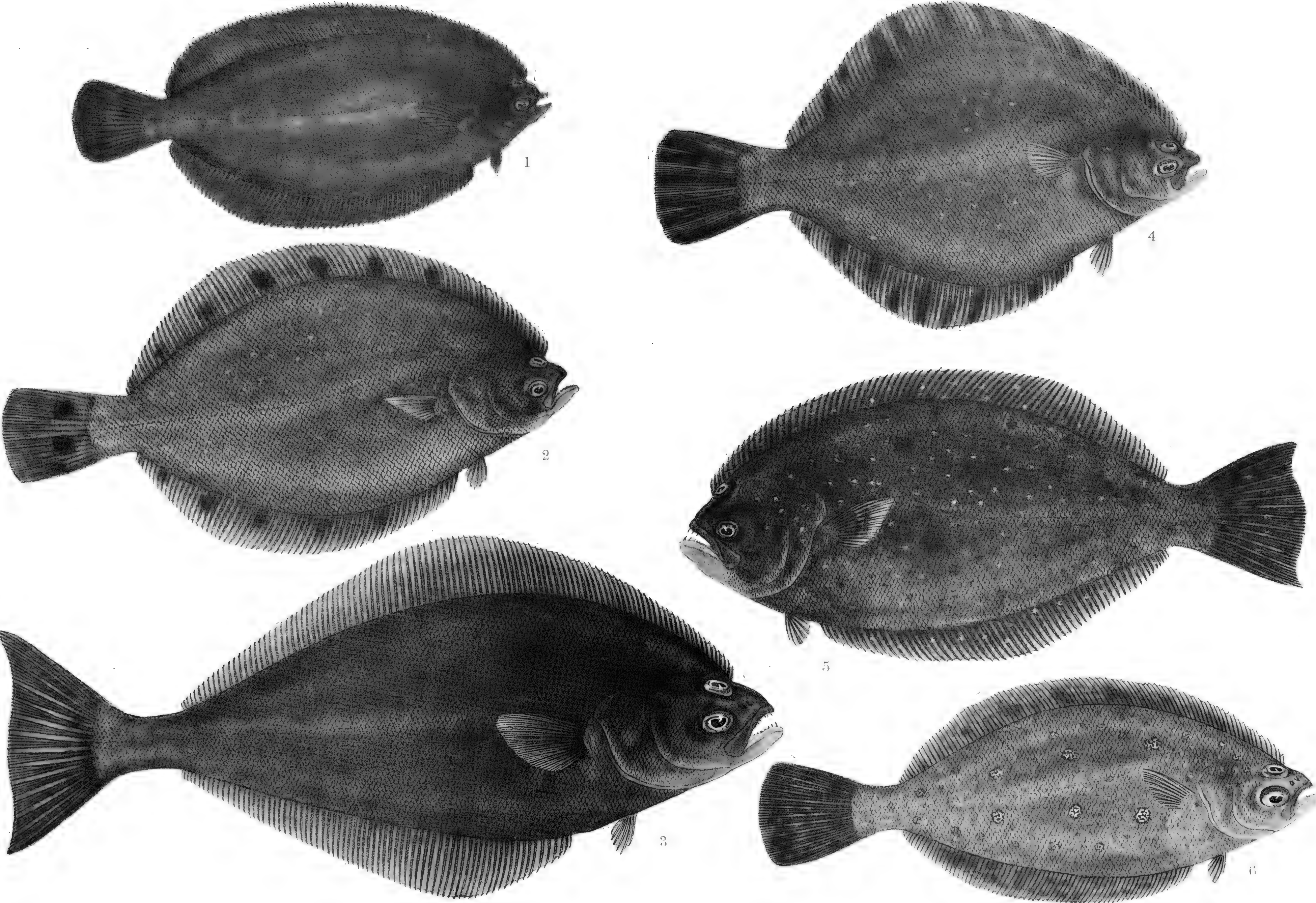
Hippoglossus stenolepis Schmidt
 <div>“Ohyō”</div>
PL. XLV, fig. 3.　　× 1/6
D. 95；A. 74.
Length of body equal to 4 1/2 times that of head, and to 3 1/6 times depth of body；length of head twice that of snout, and 8 1/2 times diameter of eye. Body rather elongated；eyes and colour on right side. Teeth large, bi-serial above, uni-serial on sides of lower jaw and in a double row in front；vomer and palatines without teeth. Dorsal fin beginning above front of pupil, its middle rays elevated；caudal fin lunate. Scales very small；lateral line with a strong arch in front, without accessory branch. Body olive-brown with bright spots. Total length attains to 1 metre；very abundant in northern Japan, especially in Okhotsk sea. Spawns in Summer, much esteemed as food.

Verasper moseri Jordan & Gilbert
 <div>“Matukawa-garei”</div>
PL. XLV, fig. 4.　　× 1/8
D. 82；A. 58；scales 84.
Length of body equal to 3 1/8 times that of head, and twice depth of body. Body thick, covered with firm scales, eyes and colour dextral. Mouth rather small；teeth of upper jaw arranged in two series, without canines；lower teeth in one series, except at symphysis, where a few teeth are arranged in several rows. Gill rakers short and thick. Lateral line with short and semicircular arch in front. Dorsal fin begins above pupil. Body dark-grey；

vertical fins with conspicuous vertical bars which run parallel with rays, left side yellowish in male and whitish in female. Body measures about 1 metre in length；found very abundantly from Hokkaido south to Ibaragi Prefecture. Males are more palatable as food than females, especially in Winter.

Paralichthys olivaceus (Temminck & Schlegel)
 <div>“Hirame”</div>
PL. XLV, fig. 5.　　× 1/4
D. 72；A. 57；scales 120.
Length of body equal to 3 3/4 times that of head, and to 2 1/2 times depth of body；length of head equal to 4 1/4 times that of snout, and to 7 1/2 times diameter of eye. Body oblong, syed or coloured side on the left；mouth large oblique, lower jaw truncated, nearly vertical at tip. Teeth of jaws sharp, slender and irregular in size and position, arranged in a single row, which is somewhat enlarged anteriorly, vomer and palatine without teeth. Dorsal fin beginning in front of eye. Lateral line without an accessory branch. Body greyish-brown, mottled with dark brown and whitish blotches, these markings distinct in young, becoming fainter with age. Body attains to upwards of 600 mm. in length；very common along all coasts of Japan, especially abundant from southern Hokkaido to Tokyo. Spawns in May to June in shallow bays, to which it has migrated from deep waters. Number of eggs at a time is about 400,000. The most delicious as food among the flounders.

Xystrias grigorjewi (Herzenstein)
 <div>“Musi-garei”</div>
PL. XLV, fig. 6.　　× 1/8
D. 86；A. 28；scales 92.
Length of body equal to 3 1/8 times that of head, 2 1/8 times depth of body. Head 4 times diameter of eye, 5 1/2 times length of snout. Body somewhat elongated, dextral, dorsal outline a little more convex than ventral. Mouth wide and oblique. Teeth in jaws small, growing larger anteriorly, those of upper jaw in two rows, those of lower in a single row. Inter-orbital space narrow, convex, its width being one sixth diameter of eye. Lateral line arched above pectoral, the width of arch equal to length of pectoral fin. Scales small, ctenoid. Dorsal fin beginning over anterior edge of pupil；anal with a scaleless spine at its insertion. Caudal bluntly angular. Colour brownish, body having 6 well-defined dark spots, arranged 3 above and 3 below lateral line；fins without spots. This fish occurs on the coasts all round Japan. Its flesh is highly esteemed.





ヤナギムシガレヒ
Microstomus kitaharae Jordan & Starks
（第四十六圖版 第一圖） ×1⁄2
D. 91 to 96；A. 75 to 83；scales(Pores) 87 to 96.

體長は頭長の21⁄4乃至29⁄20倍、體高の31⁄2乃至33⁄4倍なり。頭長は吻長の43⁄10乃至43⁄4倍、眼徑の24⁄5倍乃至31⁄5倍なり。體は細長く、眼は右側にあり。口は甚だ小にして、齒は幅廣く白齒狀を呈し、單に無眼側にのみあり。背鰭は上眼瞼孔の後縁上に始まる。臀鰭棘なし。側線は直走し彎曲部なし。體色有眼側は一樣に淡灰色にして、無眼側は白色なり。全長200 耗に達す。北日本に産す。肉は乾製或は鹽製として美味なり。

マコガレヒ
Limanda yokohamae (Günther)
（第四十六圖版 第二圖） ×3⁄5
D. 65 to 70；A. 50 to 53；側線孔 77 to 80.

體長は頭長の41⁄5乃至42⁄5倍、體高の21⁄5乃至21⁄3倍なり。頭長は吻長の6倍、眼徑の51⁄2倍なり。體高稍高く、體短く、頭は小にして背鰭起部前方に一凹窪あり。吻は著しく突出せず。兩眼間隔は狭く稍隆起し小鱗を被る。兩顎齒は1列にして齒は幅廣く、截形にして密接し、下顎左側に15乃至16齒、右側に4乃至5齒ありて上顎左側に14齒、右側になし。側線は前方に半圓形の彎曲部あり。體色右側は淡黑褐色なり。體長506 耗に達す。日本各地の沿岸に鱈産し、冬季産卵す。肉は夏美味なり。

サメガレヒ
Clidoderma asperimum (Temminck & Schlegel)
（第四十六圖版 第三圖） ×1⁄2
D. 90；A. 65.

體長は頭長の3倍、體高の14⁄5倍なり。頭長は吻長の41⁄4倍、上眼徑の5倍なり。體は短く、體高は高く、眼は右側にあり。齒は鈍く且不規則に並び、下顎に於ては右眼側に1列、無眼側に2列に並び。同様に前上顎骨の無眼側及び右眼側にも排列せり。背鰭は眼の前方に始まる。側線は前方に彎曲部なく、又附屬枝を缺く。體は無鱗なるも、成魚に於ては右眼側に小骨盤密生し、尙5乃至7列の大なる骨盤縱走す。無眼側は全く無鱗なり。體は暗褐色にして、不規則形の黒き斑紋疎に散在す。體長600 耗に達す。北海道より九州に亘りて分布す。

メイタガレヒ
Pleuronichthys cornutus (Temminck & Schlegel)
（第四十六圖版 第四圖） ×1⁄2
D. 70 to 76；A. 52 to 54；scales 80.

體長は頭長の42⁄5倍、體高の12⁄5倍乃至14⁄5倍なり。頭長は上眼徑の31⁄2乃至4倍、吻長の5倍なり。體高高く、體短く、眼は體の右側にあり。口は甚だ小さく主上顎骨は瞼孔の前縁に達す。口唇厚く皮褶を有す。兩顎齒は絨毛齒帯をなし大部分は無眼側にあり。鈎骨及び口蓋骨に齒なし。兩眼間隔の隆起線上に後方に向へる一大棘あ

り。背鰭は無眼側に始まり其起部は上眼の中央にあり。側線は前方に彎曲部なけれども附屬枝あり。體は暗灰色にして圓き暗褐色點を散布せり。全長300 耗に達し北海道より九州に分布す。美味ならず。

イシガレヒ
Kareius bicoloratus (Basilewsky)
（第四十六圖版 第五圖） ×1⁄3
D. 69；A. 50.

體長は頭長の31⁄2倍、體高の22⁄5倍なり。頭長は吻長の5倍、眼徑の51⁄2倍なり。體は稍延長し、眼は右側にあり。吻は稍突出せり。兩顎齒は1列に並び、右眼側の齒は無眼側のそれよりも小なり。背鰭は上眼の前縁上部に始まる。側線は直走し前方に於て彎曲せず。側線附屬枝を缺く。體に鱗無く、背部と側線の間に粗雜なる大骨盤1列あり。亦側線と腹部との間に同様の小骨盤1列に並び、尙側線に沿ひて1列の小骨盤列走れり。右眼側の頭部に小骨盤を不規則に散布せり。以上の骨盤は幼魚には存せず。全長600 耗に達す。東京より小樽に至る沿岸に普通に産す。春季産卵す。

ウシノシタ
Rhinoplagusia japonica (Temminck & Schlegel)
（第四十六圖版 第六圖） ×1⁄2
D. 104 to 116；A. 83 to 86；scales 92 to 96.

體長は頭長の41⁄3乃至41⁄2倍、體高の31⁄4乃至31⁄7倍なり。頭長は眼徑の12乃至14倍なり。體は鎗形を呈し、眼は左側にあり。上顎の屈曲部甚だ長く、右眼側の口唇には長き皮褶の觸鬚あり。兩顎齒は單に無眼側に帶狀に排列す。眼は甚だ小さく兩眼間隔は狭し。胸鰭無し。腹鰭は右眼側にのみありて無眼側になし。背鰭及び臀鰭は尾鰭と癒合せり。側線は右眼側に3條、無眼側に不明瞭に1條あり。鱗は右眼側に於ては櫛鱗、無眼側に於ては圓鱗なり。體は褐色にして、諸鰭は暗灰色、縁邊は淡灰色なり。此の暗灰色は左側より見れば著しく濃厚なり。全長300 耗に達す。青森より臺灣に迄分布し、最も普通の種類なり。五、六月の候産卵す。稍美味なり。

ツルマキ
Zebrias zebrinus (Temminck & Schlegel)
（第四十六圖版 第七圖） ×1⁄2
D. 73；A. 64；scales 90.

體長は頭長の51⁄2倍、體高の21⁄2倍あり。頭長は眼徑の7倍、體は甚だしく延長せず。上顎の尖端は僅に鈎狀を呈す。兩眼間の距離狭く、眼間隔には鱗あり。上眼の前部は下眼の前方の上に位す。兩顎内側には小齒帶あり。胸鰭の上部3棘は延長す。腹鰭は殆ど相稱にして臀鰭と全く分離す。背鰭及臀鰭の軟條は尾鰭をめぐりて連続す。鱗は櫛形なり。頭部及體部は褐色を帶び對をなせる黑色横帶あり。尾鰭には異なる黄色點を有する大なる黒點あり。南日本に産す。

Microstomus kitaharae Jordan & Starks
“Yanagimusi-garei”
PL. XLVI, fig. 1. ×1⁄2
D. 91 to 96；A. 75 to 83；scales (pores) 87 to 96.
Length of body equal to 21⁄4 to 29⁄20 times that of head, and to 31⁄2 to 33⁄4 times depth of body；length of head equal to 43⁄10 to 43⁄4 times that of snout, and to 24⁄5 to 31⁄5 times diameter of eye. Body slender, eye and colour on right side. Mouth very small；teeth broad and incisor-like, present only on blind side. Dorsal fin inserted above posterior margin of pupil of upper eye；anal spine obsolete. Lateral line simple, straight, without arch in front. Body uniformly light grey, blind side white. Body attains a length of 200 mm.；belongs to a rather northern species；very delicious when salted and dried.

Limanda yokohamae (Günther)
“Mako-garei”
PL. XLVI, fig. 2. ×3⁄5
D. 65 to 70；A. 50 to 53；pores 77 to 80.
Length of body equal to 41⁄5 to 42⁄5 times that of head, and to 21⁄5 to 21⁄3 times depth of body；length of head equal to 6 times that of snout, and to 51⁄2 times the diameter of eye. Body rather deep and thick；head small, a notch in front of insertion of dorsal fin；snout not noticeably prominent. Inter-orbital space narrow and somewhat convex, with small ctenoid scales. Mouth small；teeth broad, truncated, close-set, in a single row, 15 to 16 teeth on left side of lower jaw. 4 or 5 on right, 14 on left side of upper jaw, none on right. Lateral line with a semicircular arch in front. Body light brown on same side as eye. It attains a length of 500 mm. in length；very abundant throughout all coasts of Japan. Spawns in Winter；delicious in taste in Summer.

Clidoderma asperrimum (Temminck & Schlegel)
“Same-garei”
PL. XLVI, fig. 3. ×1⁄2
D. 90；A. 65.
Length of body equal to 3 times that of head, and to 14⁄5 times depth of body；length of head equal to 41⁄4 times that of snout, and to 5 times diameter of upper eye. Body thick；eyes and colour on right side. Teeth blunt and irregular；one series on eye side of mandible；two irregular rows on blind side, and also on both sides of pre-maxillary. Dorsal fin inserted in front of eye on blind side. Lateral line without arch in front, accessory branch obsolete. Body scaleless；in the adult, body close-set with bony plates；large plates arranged in 5 or 6 rather definite longitudinal series；blind side entirely without scales. Body dark-brown, sparsely mottled with irregularly shaped darker blotches. Attains a length of 600 mm. in length；found from Hokkaido to Kyusyu.

Pleuronichthys cornutus (Temminck & Schlegel)
“Meita-garei”
PL. XLVI, fig. 4. ×1⁄2
D. 70 to 76；A. 52 to 54；scales 80.
Length of body equal to 4 to 42⁄5 times that of head, and to 12⁄5 to 14⁄5 times depth of body；length of head equal to 31⁄2 to 4 times diameter of upper eye, and to 5 times length of snout. Body deep and short；colour and eye on right side. Mouth very small, maxillary reaching to anterior margin of pupil；lips thick and folded；teeth of jaws arranged in villiform bands, mostly on blind side. No teeth on vomer and palatines. There is a large spine on inter-orbital ridge, directed back-

wards. Dorsal fin beginning on behind opposite middle of upper eye. Lateral line with an accessory dorsal branch, but without arch in front. Colour dark grey, irregularly speckled with round dark-brown spots. Attains a length of to 300 mm. in total length, very common from Hokkaido to Kyusyu；not very good as food.

Kareius bicoloratus (Basilewsky)
“Isi-garei”
PL. XLVI, fig. 5. ×1⁄3
D. 69；A. 50.

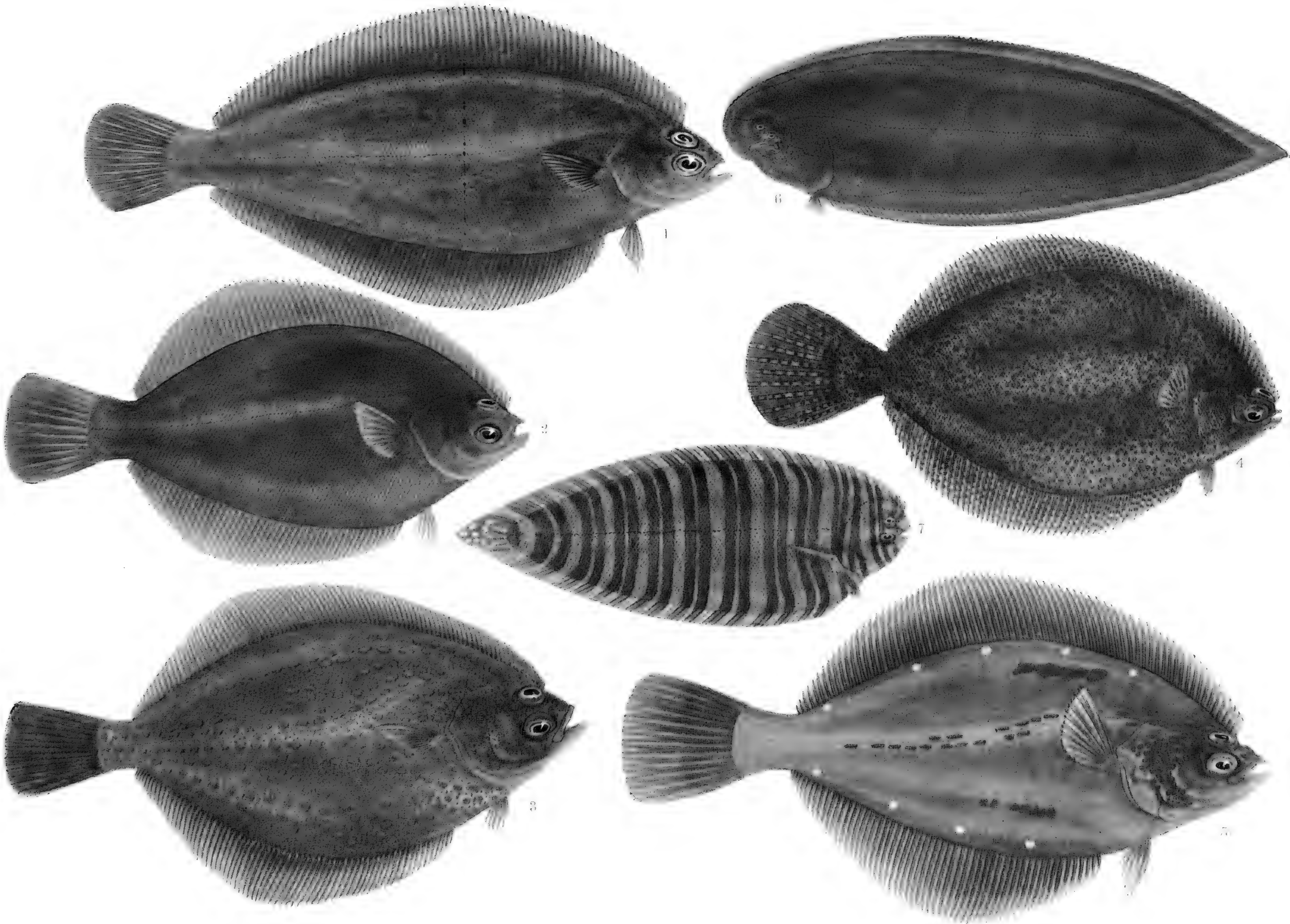
Length of body equal to 31⁄2 times that of head, and to 22⁄5 times depth of body；length of head equal to 5 times that of snout, and to 51⁄2 times diameter of eye. Body somewhat elongated, eye and colour on right side, snout somewhat prominent. Teeth of jaw arranged in a single row, those on blind side being longer than those on eye side. Dorsal fin beginning at anterior margin of upper eye. Lateral line straight, without arch in front, accessory branch being absent. Body scaleless；a row of rough large bony plates present between back and lateral line；a row of short small plates between lateral line and outline of belly；a row of small plates running along lateral line；and irregularly scattered plates on eye side of head；these plates are deficient in young specimens. The total length measures 600 mm. in large specimens；found rather commonly in northern Japan. Spawns in Spring.

Phinoplagusia japonica (Temminck & Schlegel)
“Usinosita”
PL. XLVI, fig. 6. ×1⁄2
D. 104 to 110；A. 83 to 86；scales 92 to 96.

Length of body equal to 41⁄2 to 41⁄2 times that of head, and to 31⁄4 to 31⁄2 times depth of body；length of the head equal to 12 to 14 times diameter of eye. Body lanceolate；eye and colour on left side. Hook of upper jaw very long；lips on eye side with long fringed tentacles；teeth of jaws only on the blind side, arranged in bands. Eyes very small；inter-orbital space narrow. Pectoral fin absent；ventral obsolete on blind side；dorsal and anal fins united around tail. There are three lateral lines on eye side, a rudimentary one on blind side. Scales ctenoid on eye side but cycloid on other side. Body brownish, fins dark-grey, fringed with light grey, dark-grey colour of fins very distinct on left side. Grows to 300 mm. in length；very common；found from Aomori to Formosa. Spawns May to June.

Zebrias zebrinus (Temminck & Schlegel)
“Turumaki”
PL. XLVI, fig. 7. ×1⁄2
D. 73；A. 64；scales 90.

Length of body 51⁄2 times that of head, 21⁄2 times depth of body. Head 7 times diameter of eye. Body not very elongate. Mouth terminal and curved, but the tip of upper jaw scarcely hooked. Eyes separated by a narrow, scaly inter-orbital space. Anterior fourth of upper eye above front of lower eye. Small teeth in bands on blind side of jaws. Upper 3 rays of pectoral of eyed side produced；ventral nearly symmetrical and well separated from the anal. Outlines of dorsal and anal are continuous around the caudal. Scales ctenoid. Head and body brownish, crossed with black bars which are arranged in pairs. Caudal including the tips of dorsal and anal rays marked with a large black spot which bears several yellowish spots of unequal sizes.



トビハゼ
 <div>Periophthalmus cantonensis (Osbeck)</div>
 （第四十七圖版　第一圖）×1
D. XIV, 12; A. 12; scales 75.

體長は頭長の4倍、體高の5¹/₂倍にして、頭長は吻長の3¹/₂倍、眼徑の4²/₃倍なり。體は稍延長し、前方は圓筒形にして後方は側扁せり。甚だ小なる圓鱗にて覆る。吻は鈍く、口は稍水平にして兩顎齒は鋭く強く、1列に並べり。眼は小さく、高位にありて突出し且之に接近し、下眼瞼良く發達し眼全體を蔽ふを得。胸鰭は有鱗の筋肉性基底を有す。第一背鰭は稍高し。體色背部は暗褐色にして下方は淡く、體の上方には小黑點散在せり。第一背鰭の頂邊は黒く基底に至るに従ひ淡色となる。體長 150 耗に達す。本種は支那、朝鮮及南日本の沿岸に多く、有明灣に多し。本種はムツゴロウと異り多くは淺海の砂上に棲息し、巧みに跳躍す。

ボウズゴリ
 <div>Sicyopterus japonicus (Tanaka)</div>
 （第四十七圖版　第二圖）×1
D. VI, 11; A. 11; scales 59.

體長は頭長の4¹/₃倍、體高の4¹/₂倍にして、頭長は眼徑の6²/₃倍、吻長の2¹/₂倍なり。體は稍圓筒形にして僅かに側扁し、尾柄は高く甚だしく側扁す。眼は小にして眼間隔は廣く、吻は外廓急なり。口は水平にして延長せる吻の下位にあり、唇は肥大す。上顎骨は前眼窩及び唇の下に隠れ、眼の前縁に達す。齒は小にして鋭く、兩顎に各1列あり。第1背鰭の第3棘は長く、糸狀をなす。體は褐色にして下部淡く約10條の褐色横帶あり。南日本の河川に産し。體長 130 耗に達す。

ハタハタ
 <div>Aroctoseopus japonicus (Steindachner)</div>
 （第四十七圖版　第三圖）× ² / ₃
D. X to XI, 13; A. 30 to 31.

體長は頭長の3³/₄倍、體高の3³/₄倍なり。體は稍延長側扁し、無鱗なり。口は大きく殆んど垂直形をなし、

兩顎及び鋤骨には細き鋭き齒あれど口蓋骨にはなし。前鰓蓋骨には5個の鋭棘あり。側線なし。第一背鰭は高く三角形にして第二背鰭との間隔廣し。體は銀白色にして背部は淡褐色なり。體の上部には不規則形の暗斑斑紋あり。體長 130 耗に達す。我國にては北海道及び日本海に面する北日本に多く、十二月頃沿岸に襲來し、卵は海藻殊に「ぼんだわら」類に産附せらる。

ニシキハゼ
 <div>Pterogobius virgo (Temminck & Schlegel)</div>
 （第四十七圖版　第四圖）×1
D. VIII, 28; A. 27; scales 133.

體長は頭長の4倍、體高の6¹/₂倍なり。頭長は吻長の2⁵/₈倍、眼徑の6倍なり。體は稍延長し前方は圓筒形にして後方は側扁し、小なる楕鱗を有す。背鰭及び臀鰭の基底は甚だ長く、胸鰭上方の數軟條は組絲狀にして游離せり。體色背部は黄綠褐色にして下方淡く、體側には2條の幅廣き鮮橙色の縦走帶平行に走り、各縦帶は鮮青色を以て縁取らる。頭の兩側は橙色にして各眼の上方に1青點あり。背鰭は黄褐色にして上方に幅狭き鮮青色の縦帶ありて其の外縁は橙色なり。體長 200 耗に達し東京より長崎に至る内灣に分布す。甚だ美麗なり。

タキタロウ
 <div>Rheopresbe fujiyamae Jordan & Starks</div>
 （第四十七圖版　第五圖）×2/3
D. VII, 15; A. 14;

體長は頭長の3倍、體高の6倍あり。頭部及體の前方は縦扁し、體高は頭長より稍長し、口は稍大きく、上顎は眼窩の後縁下方に達す、齒は小さく、鼻棘突出し、前鰓蓋棘は鋭く強く彎曲す、胸鰭は大きく圓く、皮膚は滑かなり。頭部及背面は褐色にして下方白し。第四乃至第七背鰭軟條下より斜前方及斜後方に暗色の斑紋あり。頭部及體に、黒點あり。本種は南日本の河川に産し體長 600 耗以上に達す。

マハゼ
 <div>Avanthogobius flavimanus (Temminck & Schlegel)</div>
 （第四十七圖版　第六圖）× ² / ₃
D. VIII, 14; A. 12; scales 48.

體長は頭長の3²/₃倍、體高の5³/₄倍なり。頭長は吻長の2²/₃倍、眼徑の6倍なり。體は稍延長し、前方は圓筒形にして、後方は側扁せり。兩顎齒は小さく狭き齒帶をなせり。體色背部は暗黄褐色にして、下方は淡く、體側には5個の大なる且不規則形の暗灰色斑紋あり。背鰭には斜縦帶に並べる小黑點數條あり。尾鰭の上部三分の二には波狀列に並べる黒點あり。體長 250 耗に達す。我國にては最も普通なる「ハゼ」にして半鹹水の淺き内灣に棲み又河川を溯上す。六月頃に至れば海藻中に産卵す。味稍美なり。

ムツゴロウ
 <div>Boleophthalmus pectinirostris Gmelin</div>
 （第四十七圖版　第七圖）×1
D. V, 25; A. 25.

體長は頭長の4¹/₃倍、體高の6¹/₄倍なり。頭長は吻長の3²/₃倍、眼徑の6倍なり。體は延長し甚だ小なる鱗を有す。眼の位置高く、且突出し、兩眼は接近し、下眼瞼よく發達せる爲容易に眼を蔽ふを得。上顎齒は1列に並び其の各側前方の3乃至4個の齒は犬齒となれり。下顎齒は2列に並ぶ。第一背鰭は突出して絲狀をなす。第二背鰭及び臀鰭の基底は長く、胸鰭基底は筋肉性にして鱗を有す。腹鰭は完全に癒合せり。體色背部は青褐色にして小白點を密布せり。下方淡し。第一背鰭は青灰色にして多くの小白點を有し。第二背鰭には同様の白點が7縦列に並列せり。尾に於ては白點は垂直列に並べり。體長 150 耗に達す。九州有明灣及び朝鮮の沿岸に多く、常に淺き泥底上に棲息し、干潮時は肉質の胸鰭を以て泥上を跳躍す。

ミシマオコゼ
 <div>Uranoscopus japonicus Houttuyn.</div>
 （第四十七圖版　第八圖）× ² / ₃
D. IV, 14; A. 13; scales 64.

體長は頭長の3¹/₃倍、體高の4¹/₃倍にして、頭長は

吻長の7倍、眼徑の5¹/₃倍なり。體は強壯にして後方細くなれり。頭部背面は扁平にして骨質性なり。口は垂直形にして口中舌の下方に伸出性の絲狀物あり、齒は小さく下顎には二列、上顎には一列に並び鋤骨、口蓋骨及び咽頭骨には絨毛狀帶に並べり。吻は短く、鈍く、眼は小にして頭の上方にありて斜上方に向へり。大なる上膊棘あり。頭部及び體の背方には褐色の網狀紋ありて白點を圍み第一背鰭は黒し。體長 250 耗に達し日本各地の沿岸に産し、殊に南日本に多し。

シマハゼ
 <div>Tridentiger bifaciatus Steindachner</div>
 （第四十七圖版　第九圖）×1
D. VI, 13; A. 11; P. 19; scales 54.

體長は體高の5倍、頭長の3½倍なり。頭は廣く上方平らたく、かじか類に似たり。眼は小形、眼隔廣し。齒の外列にあるものは三個の突起を有し内列のものと區分せらる。鱗は普通の楕鱗なり。體は淡褐色で廣い黑色の縦線二本あり。一つは頭部より背鰭の下方に沿ひて尾柄に達し次は胸鰭基部より體側中央を通り尾柄に達す。我國沿岸に普通に産す。

ワラスホ
 <div>Taenioides lacepedei (Temminck & Schlegel)</div>
 （第四十七圖版　第十圖）×1
D. VI, 46. A. 44

體長は頭長の7¹/₂倍、體高の17倍なり。體は甚だ延長して鰻狀を呈し鱗を缺く。口裂はほとんど垂直形にして下顎は上顎より長し。齒は兩顎共2列並び外列齒は強く牙狀を呈せり。眼は小にして皮膚中に隠る。背鰭は1基にして其の基底長く背鰭及び臀鰭は長き尾鰭に連續せり。側線孔は小孔群 27 個に依つて代表され各小孔群は垂直に1列をなして並ぶ。體色青褐色なり。體長 39 耗に達す。本種は淺海の泥中に生棲す。南日本に産し九州、柳川に多し。

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Periophthalmus cantonensis (Osbeck)
“Tobihaze”
PL. XLVII, fig. 1. ×1

D. XIV, 12; A. 12; scales 75.

Length of body equal to 4 times that of head, and to $5\frac{1}{3}$ times depth of body. Body elongated, sub-cylindrical anteriorly, compressed behind, covered with very small cycloid scales; sharp and strong teeth arranged in a single row in each jaw. Eyes small, placed high, close together, and prominent; lower eyelid well developed and capable of extending over whole eye. Pectoral fin with a muscular base. Colour of body dark-brown above, paler below, dark specks scattered on upper part of body; top of spinous dorsal dark, growing lighter towards its base. The species attains to 150 mm. in length. This fish haunts muddy bottoms on the coasts of China, Korea and southern Japan, being especially common in the Ariake Sound.

Sicyopterus japonicus (Tanaka)
“Bôzu-gori”
PL. XLVII, fig. 2. ×1

D. VI, 11; A. 11; scales 59.

Length of body $4\frac{1}{3}$ times that of head, and $4\frac{1}{7}$ times depth of body. Length of head $6\frac{2}{3}$ times diameter of eye, and $2\frac{1}{2}$ times length of snout. Body sub-cylindrical, but slightly compressed; caudal peduncle high, very much compressed. Eye small, inter-orbital broad, snout rather abrupt in profile. Mouth horizontal, beneath overhanging snout; lips wide and fleshy. Maxillary completely concealed beneath pre-orbital and lips, extending to vertical, and passing through anterior rim of eye. Teeth small, acute, in one row in each jaw; vomer and palatines toothless. Third spine of first dorsal produced and filiform. Scales small, ctenoid; head entirely scaleless. Colour of body brownish, pale beneath; about 10 cross-bands of brown colour present. A river fish of southern Japan, attaining to a length of 130 mm..

Arctoscopus japonicus (Steindachner)
“Hatahata”
PL. XLVII, fig. 3. × $\frac{2}{3}$

D. X to XI, 13; A. 30 to 31.

Length of body equal to $3\frac{3}{4}$ times that of head, and to $3\frac{3}{4}$ times depth of body. Body rather elongated, compressed, without scales. Mouth large and almost vertical; teeth slender and sharp, arranged in bands in jaws and on vomer, but none on palatines. Pre-opercle with 5 sharp spines. Colour of body silvery, back light-brown, upper part of body mottled with irregularly shaped dark-brown blotches. The fish attains to 130 mm. in length. This species is very abundant in northern Japan, especially so around Akita. It spawns on rocky shores in December; the eggs are large and attached to sea-weed (*Sargassum*) or other objects. Average length 200 mm. and used as food.

Pterogobius virgo (Temminck & Schlögel)
“Nisiki-haze”
PL. XLVII, fig. 4. ×1

D. VIII, 28; A. 27; scales 133.

Length of body equal to 4 times that of head, and to $6\frac{1}{2}$ times depth of body. Body rather elongated, cylindrical anteriorly, compressed posteriorly, covered with small finely ctenoid scales, except on upper part where scales are cycloid. Teeth simple, not trifold, slightly curved, arranged in 2 or 3 rows in both jaws. Barbels absent on chin. Pectoral fin has a few short free silk-like rays above. Colour of body greenish-olive above, paler below; along sides of body 2 rather broad, bright-orange parallel, and longitudinal bars present, which are bordered above and below with clear blue; there is a blue-violet band on cheeks parallel with the lateral bars; sides of head are orange; a blue spot above each eye; dorsal fins olive above, with a narrow band of clear blue edged with orange. The species attains to a length of 200 mm.. This brilliantly coloured fish is caught in estuarine waters and bays from Tokyo to Nagasaki.

Rheopresbe fujiiamae Jordan & Starks
“Takitaro”
PL. XLVII, fig. 5. × $\frac{2}{3}$

D. VII, 15; A. 14;

Length of body equal to 3 times that of head, and to 6 times depth of body. Head and anterior part of body depressed, the body scarcely deeper than the head. Mouth rather large; maxillary reaching to posterior margin of orbit; teeth small cardiform. Nasal spines acute, but no sharp; preopercle spine sharp and strongly hooked; 3 blunt spine below it. Pectoral rather broadly rounded behind. Skin everywhere smooth. Colour of head and back dark brown, belly white; a dark bar under the fourth to seventh dorsal ray running obliquely forward and downward toward front of anal; head and body with dusky spots. This species is rather common in the rivers of southern Japan; it always live in rocky holes or under water grass.

Acanthogobius flavimanus (Temminck & Schlegel)
“Mahaze”
PL. XLVII, fig. 6. × $\frac{2}{3}$

D. VIII, 14; A. 12; scales 48.

Length of body equal to $3\frac{2}{3}$ times that of head, and to $5\frac{3}{4}$ times depth of body. Body rather elongated, cylindrical anteriorly, compressed behind. Teeth small, arranged in narrow bands in both jaws. Cheeks and upper part of opercles covered with small cycloid scales. Colour of body dark yellowish-brown above, paler below; sides of

body with five large irregular dark grey spots; dorsal fin with oblique rows of dark spots; upper two-thirds or more of the caudal fin with zigzag dark bands. The species attains to 250 mm. in length. It is one of the commonest goby throughout Japan, found in the muddy bottoms of brackish waters, occasionally ascending the streams. Spawns in the algae or weeds in June.

Bolcophthalmus pectinirostris Gmelin
“Mutugoro”
PL. XLVII, fig. 7. ×1

D. V, 25; A. 25.

Length of body equal to $4\frac{1}{6}$ times that of head, and to $6\frac{1}{4}$ times depth of body. Body elongated, covered with very small scales. Eyes placed high, prominent and close together, the lower eyelid developed so that it easily covers the eye. Tongue short, round and not free at the tip; teeth of upper jaw arranged in one row, anterior 6 to 8 ones forming the canines; lower jaw in 2 rows. First dorsal fins produced and filamentous. Colour of body bluish-grey above, spotted densely with white spots, paler below; spinous dorsal fin bluish-grey with many round white spots; on soft dorsal fin the same white spots are arranged in about 7 longitudinal rows; similar white spots are arranged vertically on caudal fins. The fish attains to 150 mm. in length, being very abundant on the muddy shores of Korea and in the Ariake Sound of Kyusyu. It leaps with muscular pectoral fins; spawns in Summer.

Uranoscopus japonicus (Houttuyn)
“Misimaokoze”
PL. XLVII, fig. 8. × $\frac{2}{3}$

D. IV, 14; A. 13; scales 64.

Length of body equal to $3\frac{1}{6}$ times that of head, and to $4\frac{1}{6}$ times depth of body. Body thick; head flat and largely bony above, mouth nearly vertical with a retractile filament in mouth beneath tongue; teeth small, arranged in two rows in lower jaw, but in one row in upper; in villiform bands on vomer, palatines and pharyngals. Snout short and blunt; eye small, directed obliquely upwards, situated on upper side of head. There is a large humeral spine. Scales very small and deeply embedded. Ground colour of head and body form brownish reticulations round whitish spots, those on body being larger than those on head. First dorsal fin black. It attains to 250 mm. in length, and is rather common along the entire coast of Japan, but especially abundant in southern Japan.

Tridentiger bifasciatus Steindachner
“Simahaze”
PL. XLVII, fig. 9. ×1

D. VI, 13; A. 11; P. 19; scales 54.

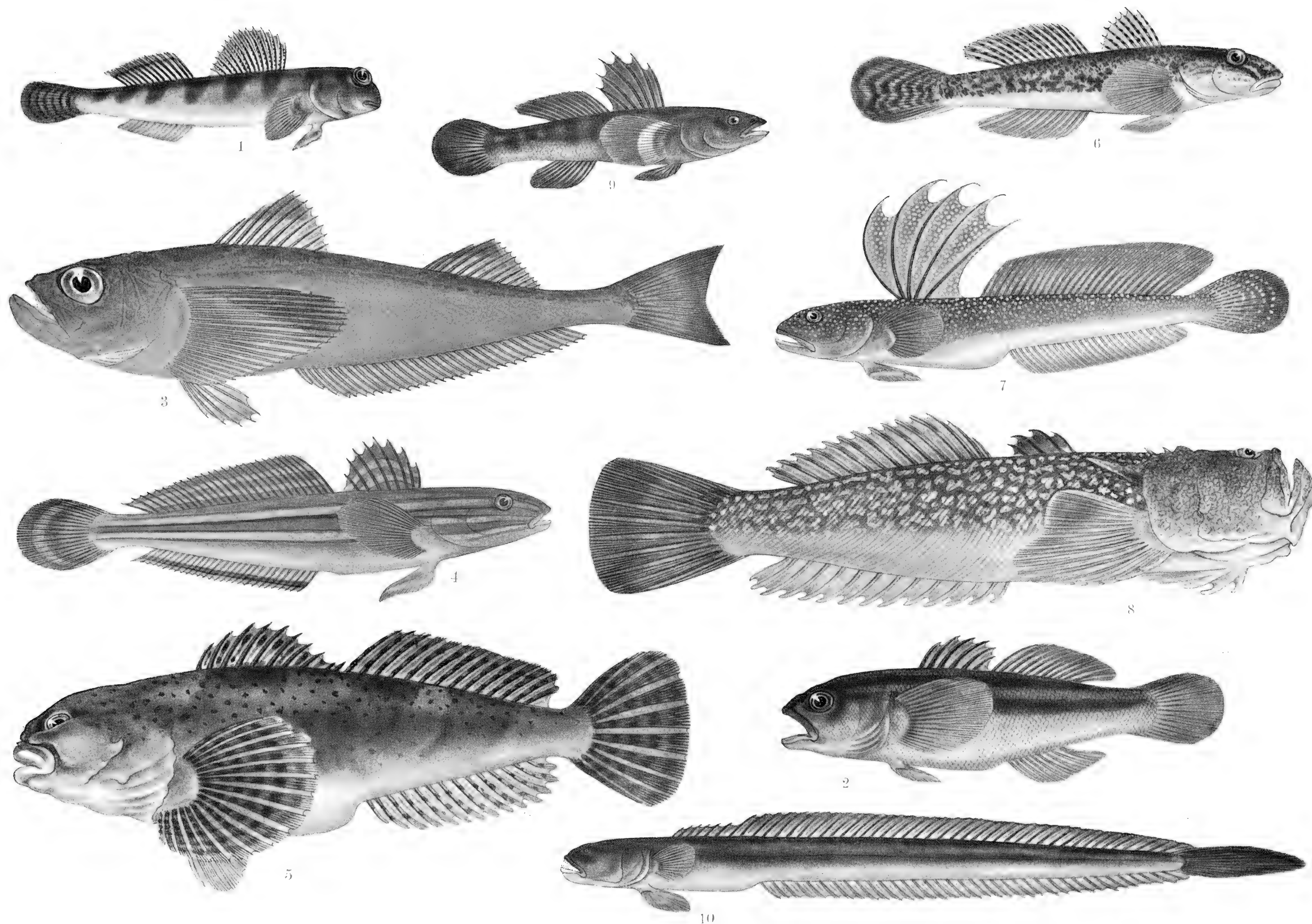
Length of body equal to 5 times that of depth of body, and to $3\frac{1}{2}$ times that of head. Head very broad, *Cottuslike*, flattish above; eyes small; interorbital broad. Teeth in the outer row trifold, well separated from the inner row of smaller pointed teeth. Scales on body moderate, ctenoid.

Colour olivaceous, a broad black band on each side beginning at the forehead and extending along below the dorsals to the caudal; second band along middle of side from base of pectoral to caudal.

Taenioides lacepedei (Temminck & Schlegel)
“Warasubo”
PL. XLVII, fig. 10. ×1

D. VI, 46. A. 44.

Length of body equal to $4\frac{1}{2}$ times that of head, and to 17 times depth of body. Body greatly elongated, eel-shaped, without scales. Teeth arranged in two series in both jaws, outer ones strong and fang-like. Eyes small, hidden in the skin. Dorsal fin continuous; its soft portion and anal fin also are continuous around caudal fin. Lateral line represented by a series of 27 groups of minute pores, each group arranged in vertical lines. Colour of body bluish-brown. It attains to 300 mm. in length. This species haunts muddy bottoms of shallow waters in southern Japan, being especially common in the Ariake Sound in Kyusyu.





クラカケギス

Neopercis sexfasciata (Temminck & Schlegel)

（第四十八圖版 第一圖） ×1

D. V, 23; A. 19 to 20; scales 60 to 63.

體長は頭長の3 1/3 倍、體高の6 倍なり。頭長は吻長の3 1/6 倍、眼徑の3 3/4 倍なり。體は延長し稍圓筒形にして尾柄著しく側扁せり。眼は稍大きく斜上方に向へり。兩眼隔狭く凹み、吻は先端尖がれり。下顎は上顎より稍長し、兩顎齒は幅狭き齒帶をなして排列し、鋤骨及び口蓋骨に齒あり。背鰭棘は短く、強く、最後の棘最長なり。

體には小さき櫛鱗を有す。生魚は赤けれども「フォルマリン」漬のものは黄褐色なり。體側には側線及び其の下部に沿ひて1 條の淡色縦帶あり。體側上方には4 條のV 狀の褐色斑紋あり。頬部に1 暗點あり、頭部より胸鰭基底に延長せる1 暗色帶あり。胸鰭基底に1 暗色斑紋あり。尾鰭基底の上方には黑色小點あり。背鰭は淡色にして邊緣近くに沿ひて1 條の狭き不明瞭なる縦帶あり。臀鰭邊緣黒し。尾鰭上方に約5 條の波狀垂直帶あり。體長150 耗に達す。東京より長崎に至る淺き砂底の内灣に盛産す。食用魚として重要ならざれど、浦鐸材料に廣く用ゐらる。

ノドクサリ

Callionymus valenciennesi Temminck & Schlegel

（第四十八圖版 第二圖（雄） 第三圖（雌） ×1

D. IV, 9; A. 9.

體長は頭長の3 1/3 倍、體高の11 倍にして頭長は眼徑の3 倍、吻長の2 1/3 倍なり。體は延長側扁し、頭部も亦側扁す。吻は稍長く鈍なり。眼は接近して頭部上方にあり。口は小にして下位にあり。上顎骨は眼に達せず。兩顎齒は絨毛狀にして下唇は厚し。前鰓蓋骨の棘には4 個の大なる齒あり。背鰭 細長にして長さ稍等しく或ものは時に絲狀をなす。尾鰭は長く、鈍く尖る。體は褐色にして下部淡し。雄の背鰭邊緣は暗褐色にして、雌は背鰭後部に大なる圓點を有す。

オキトラギス

Neopercis multifasciata (Döderlein)

（第四十八圖版 第四圖） ×1

D. V, 23; A. I, 19; scales 60.

體長は頭長の2 1/3 倍、體高の5 1/3 倍にして 頭長は眼徑の3 1/2 倍、吻長の3 1/10 倍なり。體は延長し圓筒形をなす。頭は中等大にして眼の前縁上部の外廓は強く彎曲す、吻は短く尖る。口は前方に近く傾斜し、兩顎は略等し。齒は小にして外側のものは内側よりも大なり。鋤骨及び口蓋には絨毛狀齒あり。前鰓蓋骨は圓滑にして鰓蓋の上部に細棘あり。背棘は短く硬く尾鰭は廣圓なり。鱗は櫛狀をなす。體は黄紅色にして10條の横帶對生し其の間と同様の薄色帶を作る。尾鰭基底には不規則なる黑色の斑紋あり。南日本に産し150 耗に達す。

アカヌメリ

Callionymus altivelis Temminck & Schlegel

（第四十八圖版 第五圖） ×1

D. 1V, 8; A. 7.

體長は頭長の4 倍、體高の6 倍にして、頭長は眼徑の4 倍、吻長の2 1/2 倍なり。體は延長側扁し上下外廓は稍水平に並行す。前鰓蓋骨の棘は上部鈎狀をなす。第一背鰭は鰓孔と對立し、臀鰭は第三背軟條の下部に始る。胸鰭は圓く、尾鰭は長く圓し。體に鱗なく赤褐色にして背部には青褐色の亂紋あり。稍深所に棲息す。

イカナゴ

Ammodytes personatus Girard

（第四十八圖版 第六圖） ×1

D. 54; A. 30; laterel folds 153.

體長は頭長の4 1/2 倍、體高の1 倍にして、頭長は眼徑の5 倍、吻長の3 1/2 倍なり。體は延長し槍鋒狀をなす。皮膚には多くの横皺ありて下方及び後方に斜走し、其の間に小櫛狀鱗を有す。上顎骨は眼窩の前部に達し、背鰭は胸鰭後方第三軟條の上部に起り、背軟條の最長なるものは體高の半に達す。尾鰭は凹形をなす。體褐色にして下部淡し。體長2 0 耗に達す。廣く食用に供さる。

Neopercis sexfasciata (Temminck & Schlegel)

“Kurakake-gisu”

PL. XLVIII, fig. 1. ×1

D. V, 23; A. 19 to 20; scales 60 to 63.

Length of body equal to 3 1/3 times that of head, and 6 times the depth of body; length of head equal to 3 1/6 times that of snout and 3 3/4 times diameter of eye. Body elongated, sub-cylindrical; caudal peduncle much compressed; eye rather large, directed obliquely upward; inter-orbital narrow, concave; snout pointed at tip. Lower jaw a little longer than the upper; teeth in jaws in narrow bands; vomer and palatine toothed. Dorsal spine short and stiff.

Colour of body red in life, a pale lateral band along and below lateral line; four V-shaped brown markings on upper part of body; a dark spot on cheek; another dark band extending from nape to base of pectoral; a dark blotch on base of pectoral; a black ocellus at upper base of caudal; dorsal pale, with a narrow faint band near dorsal edge; anal pale, with dusky edge; upper part of caudal with about five undulating cross bands. It reaches to more than 150 mm. in total length. This species is very common in sandy bays from Tokyo to Nagasaki. Not so important as food.

Callionymus vallenciennesi Temminck & Schlegel

“Nodokusari”

PL. XLVIII, fig. 2. male, fig. 3. female. ×1

D. IV, 9; A. 9.

Length of body 3 1/3 times that of head, and 11 times depth of body. Length of head 3 times diameter of eye, 2 1/3 times length of snout. Body elongated and compressed. Head also compressed; snout rather long and blunt. Eyes close together, on top of head, directed upwards. Mouth small, inferior, the jaws sub-equal; maxillary not reaching the eye. Teeth in jaws in villiform bands. Lower lip thick. Pre-opercular spine with 4 large teeth turned upwards, and a short spine projecting from its base forward. Dorsal spines slender, sub-equal in length, some of them sometimes filamentous; caudal long, bluntly pointed. Colour of body brownish, much lighter below. The male has a free margin of spinous dark-brown dorsal, whilst the female has a large ocellated spot on the posterior part of that fin.

Neopercis multifasciata (Döderlein)

“Oki-toragisu”

PL. XLVIII, fig. 4. ×1

D. V, 23; A. 1, 19; scales 60.

Length of body 2 2/3 times that of head, and 5 1/3

times depth of body. Length of head 3 1/2 diameter of eye, and 3 1/10 times length of snout. Body elongated, sub-cylindrical, head moderately large, with strongly curved profile above anterior margin of eye. Snout short, and pointed. Mouth sub-terminal, oblique; jaws sub-equal, with small teeth, of which outer ones are larger; vomer and palatines with villiform teeth. Maxillary entirely concealed by pre-orbital, reaching vertically through anterior margin of pupil. Pre-operele smooth, rounded; opercle with a slender spine above. Dorsal spines short, rather slender, stiff; caudal broadly rounded. Scales ctenoid. Reddish-yellow; 10 cross-bands, arranged in pairs more or less, abruptly fading out immediately below lateral line; a faint similar band between each pair of the bands; blackish irregular blotch on base of caudal. A small fish of southern Japan, measuring 150 mm. in length.

Callionymus altivelis Temminck & Schlegel

“Aka-numeri”

PL. XLVIII, fig. 5. ×1

D. IV, 8; A. 7.

Length of body 4 times that of head, and 6 times depth of body. Length of head 4 times diameter of eye, and 2 1/2 length of snout. Body elongated, depressed, with sub-horizontal parallel upper and lower outlines. Pre-opercular spine with a single large hook above; first dorsal opposite the gill opening; anal beginning below the first third of the soft dorsal; pectoral rounded; caudal long, strongly rounded. Body entirely scaleless. Brick-red; the back marbled with pale brown. Generally speaking, it is a deep-sea fish.

Ammodytes personatus Girard

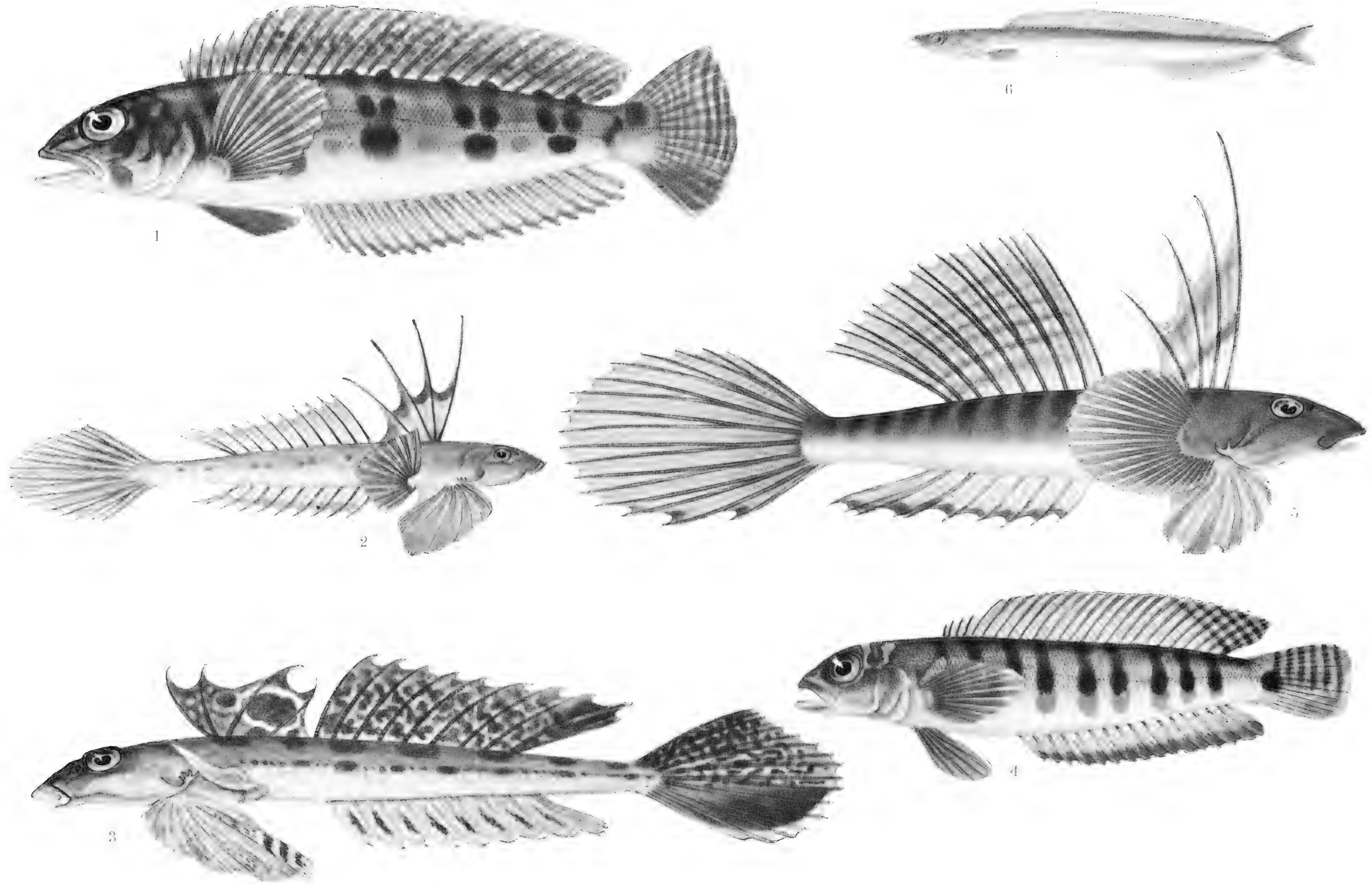
“Ikanago”

PL. XLVIII, fig. 6. ×1

D. 54; A. 30; lateral folds 153.

Length of body 4 1/2 times that of head, and 11 times depth of body. Length of head 5 times diameter of eye, and 3 1/2 times length of snout.

Body elongated, and lanceolated, the skin having many transverse folds running obliquely downwards, the small cycloid scales mostly in oblique cross series between them. Maxillary extending to front of orbit. Dorsal inserted over posterior third of pectoral, longest dorsal ray about half depth of body. Caudal emarginated. Colour of body brownish, much lighter below. This fish attains to a length of 200 mm. It is a popular food-fish, and is also devoured by other fishes.



カエルウヲ
Salarias enoshimae (Jordan & Snyder)
(第四十九圖版 第一圖) ×1
D. XIII, 21; A. I, 22; P. 14.

體長は頭長の 5 1/10 倍、體高の 4 9/10 倍なり。頭長は眼徑の 4 1/2 倍なり。體は稍延長し且側扁せり。吻は短く鈍く、その前縁外端は殆ど垂直なり。眼は甚だ高く且前方にあり。口は小さく水平にして、齒は 1 列に排列し、各齒は顎骨に連続せざる爲自由に動かすを得、各齒は小さく細長く、相互に接近して櫛狀に排列せり。後部に犬齒なく、鋤骨及び口蓋骨に齒なし、後頭部の上方に半月形の薄き皮質突起あり。體には鱗なし。側線は前方に於て彎曲し後方に於て所々中斷せり。背鰭棘部と軟條部とは深き缺刻に依つて分離せり。體色背部は紫黒色にして下方淡く、體側には幅狭き雲狀の白線あり、背鰭棘部には不明瞭なる 2—3 の白點あり。背鰭軟條部には幅狭き波狀の斜線の列を有す。體長 150 耗を超ゆ。本種は房州、三崎、及び江戸島近傍のタイド・プールに多く、常に岩穴に棲息せり。胎生にして常に植物性餌料を食す。

ダイナンギンボ
Dictyosoma burgeri Van der Hoeven
(第四十九圖版 第二圖) ×1/2
D. LII, 10; A. I, 10.

體長は頭長の 6 1/2 倍、體高の 7 1/2 倍なり。頭長は吻長の 4 1/3 倍、眼徑の 6 1/3 倍なり。體は延長し、皮中に沒せる小鱗を有す。但し頭部は無鱗なり。吻は鈍く、その上部外端に低き肉質の 1 隆起線ありて後頭部迄延長せり。體には側線と直角に交れる多くの横走溝あり。兩鰓膜は幅廣く癒合し、峽部と全く分離せり。腹鰭なし。背鰭及び臀鰭は尾鰭と連続せり。體は青黒色或は黒褐色にして、眼より後部下方に向つて 1 條の幅廣き黒褐色の 1 帶走れり。體長 400 耗に達す。小なるものは岩質のタイド・プールに多けれども、長ずるに従ひ内灣深部に移動す。中部日本に多し。

ギンボ
Enedrias nebulosus (Temminck & Schlegel)
(第四十九圖版 第三圖) ×2/3
D. LXXXI; A. II, 39.

體長は頭長 8 3/4 倍、體高の 6 2/3 倍なり。頭長は吻長の 5 1/2 倍、眼徑の 5 2/3 倍なり。體は甚だ延長し、側扁し、頭は小なり。兩顎齒は小さく、鈍く狭き帶狀に並べり。頭部及び軀幹部に小圓鱗を有す。頭上に皮質の觸手狀突起なし。側線を缺く。背鰭は棘のみより成り、腹鰭は 1 小棘と 1 小軟條とに退化せり。體側には不規則形の黃褐色の斑紋を有し、腹部は黃色なり。1 暗色帶が眼より下方に延長せり。同様の暗帶が兩眼隔間を連絡せり。背鰭及び臀鰭にも體側と同様の斑紋あり。體長 300 耗に達す。日本各地の淺き内灣に普通なるも、特に北日本に多し。甚だ美味なり。産卵は冬期海藻の間に於て行はれ卵は海藻或は其他の物體に附着せらる。

スケトウダラ
Theragra chalcogramma (Pallas)
(第四十九圖 第四圖) ×1/3
D. 12, 14, 18; A. 20, 20.

體長は頭長の 4 倍、體高の 6 倍なり。頭長は吻長の 3 1/6 倍、眼徑の 5 倍なり。體は稍延長せり。下顎は突出し

小なる觸鬚あり。兩顎齒は同様にして、絨毛齒帶を作れり。鋤骨に絨毛齒あるも口蓋骨は無齒なり。背鰭 3 基ありて各鰭は明かに分離せり。腹鰭は稍絲狀に延長し、先端は肛門に達せり。肛門は第一及び第二背鰭の中央下に存せり。尾鰭後縁は半月形を呈す。體は黃褐色にして下方淡く、體側には所々中斷せる 2 條の縱帶あり。體長 900 耗に達す。日本海に於ては山口縣に迄分布し、朝鮮東海岸、北海道、富山縣、新潟縣に饒産し、太平洋岸には少なし。本種は 200 尋以深の下層部を游泳せり。産卵時期は十一月より翌年四月に亘り、産卵は淺海に於て行はる。卵巢は甚だ美味なり。朝鮮にては本種を明太魚と稱し、多くは乾製す。

ソコヒゲダラ
Haloporphyrus oidema Tanaka
(第四十九圖版 第五圖) ×1/3
D. 4, 60; scales 200.

體長は頭長の 3 2/3 倍、體長の 4 倍あり。頭長は眼徑の 4 2/3 倍、吻長の 3 1/6 倍なり。體は長く、側扁し、第一背鰭の基底最も高く、頭は稍短かく、僅かに側扁し、眼は大形なり。口は大きく、斜位にして下顎短かし。頤に鬚あり。兩顎の齒は絨毛狀にして稍廣く、鋤骨齒あれど口蓋骨に齒を有せず。第一背鰭軟條及腹鰭條は延びて糸狀をなせり。鱗は小さく圓形なり。體は黒褐色にして、下方淡く、相模灣以北の深海に産す。

タラ
Gadus macrocephalus Tilesius
(第四十九圖版 第六圖) ×1/4
D. 13, 18 16; A. 21, 17.

體長は頭長の 3 倍、體高の 4 3/4 倍なり。頭長は眼徑の 6 倍なり。體は稍延長し、頭は大きく、後方は細長となる。口は稍大きく、下顎は上顎より短し。下顎に於ける觸鬚は長し。兩顎齒は強く、且櫛齒狀にして、狭き帶狀に並べり。鋤骨には齒を有すれども、口蓋骨にはなし。側線は淡色なり。肛門は第二背鰭の下方にあり。背鰭は 3 基にして、各々よく分離せり。臀鰭は 2 基にして分離せり。尾鰭後縁は半月形を呈す。體色背部は淡褐色にして下方淡く、背部及び體側には多くの不規則なる暗褐斑紋あり尾鰭、第二背鰭及び第三背鰭は暗色なり。體長 1 米を超ゆ。我國に於ては太平洋岸は金華山沖以北に分布し、日本海北部及び朝鮮東岸に饒産す。本種は南方に於ては約 100 尋前後の深海底に漁獲さるゝも、北方漁場より來るものは多くは 10 尋乃至 40 尋内外の深さに於て漁獲さる。本種の棲息適溫は攝氏の 5 度前後なり。卵は小さく 1 尾の産卵數 200 萬乃至 500 萬にして、産卵期は一、二月の候なり。

コマイ
Eleginus navaga (Kölreuter)
(第四十九圖版 第七圖) ×1/2
D. 13, 18, 18; A. 22, 20; scales 157.

體長は頭長の 3 1/4 倍、體高の 6 倍あり。頭長は眼徑の 5 3/4 倍、吻長の 3 倍あり。體は延長し尾稍細く、吻短かく圓し。主上顎骨は瞳孔の前縁に達し、頤に小さき鬚あり。兩顎及鋤骨に齒あり。

圓鱗は小なり。體は灰褐色にして下方淡く、體長 3 40 耗に達す。北海道以北に産す。

Salarias enoshimae (Jordan & Snyder)
“Kaeru-uwo”
PL. XLIX, fig. 1. ×1

D. XIII, 21; A. I, 22; p. 14.
Length of body equal to 5 1/10 times that of head, and to 4 9/10 times depth of body; length of head equal to 4 1/2 times diameter of eye. Body rather elongated and compressed; snout short, blunt, its anterior profile sub-vertical. Eye very high and far anterior; mouth small, horizontal; teeth, in single row all movable, small, slender, implanted in the skin of lips, teeth close together and comb-shaped, posterior canine obsolete; no teeth on vomer or on palatines. A thin, crest-shaped dermal flap on upper part of occiput. Body entirely uncovered with scales. Lateral line arched in front, the line distinct anteriorly, disappearing posteriorly. Spinous part of dorsal fin separated from soft part by a deep notch. Body purplish-dark-grey, belly paler; body marked with narrow clouded white touches; spinous dorsal with 2 or 3 rows of indistinct light spots; a wavy narrow line running obliquely on soft dorsal. Usual length about 150 mm. Common in tide pools of southern Japan, such as Bōsyū, Misaki, Enosima, etc., always living in rocky holes; viviparous, and herbivorous in habit.

Dictyosoma burgeri Van der Hoeven
“Dainanginpo”
PL. XLIX, fig. 2. ×1/2

D. LII, 10; A. I, 10.
Length of body equal to 6 1/2 times that of head, and to 7 1/3 times depth of body, length of head equal to 4 1/3 times that of snout, and to 6 1/2 times diameter of eye. Body elongated, covered with small embedded scales with exception of head. Snout blunt, its upper part with a low fleshy ridge, which extends to occiput. Body covered with tubes crossing at right angles to lateral line and forming an elaborate network over body. Gill membranes broadly united, without fold and free from the isthmus. Ventral fins absent; dorsal and anal fins united with caudal. Body bluish-black; a broad blackish-brown band passing downwards and backwards from eye. It attains to 400 mm. in length; rather common in rocky tide pools and bays of central Japan.

Enedrias nebulosus (Temminck & Schlegel)
“Ginpo”
PL. XLIX, fig. 3. ×2/3

D. LXXXI; A. II, 39.
Length of body equal to 8 1/6 times that of bead, and to 6 2/3 times depth of body; length of head equal to 5 1/2 times that of snout, and to 5 2/3 times diameter of eye. Body very elongated, compressed; head small. Teeth small and blunt, arranged in narrow bands in both jaws. Head and body covered with very small cycloid scales; no tentacle on head. Lateral line obsolete. Dorsal fin composed of spines only; ventral reduced to a single spine followed by a rudimentary ray. Body variously mottled with irregular-shaped olive-brown blotches, belly orange; a dark stripe extending downwards from eye and also to inter-orbital space; dorsal and anal fins also mottled like body. Fish measures to 300 mm. in length; very common throughout coasts and in estuarine waters in shallow bays of Japan; fairly good as food. Spawning occurs among sea-weeds in Winter, the adhesive eggs being attached to algae or other objects.

Theragra chalcogramma (Pallas)
“Suketōdara”
PL. XLIX, fig. 4. ×1/3

D. 12, 14, 18; A. 20, 23.
Length of body equal to 4 times that of head, and to 6 times depth of body; length of head equal to 3 1/6 times that of snout, and to 5 times diameter of eye. Body rather elongated. Lower jaw projecting, chin with a minute barbel; teeth in jaws sub-equal, in villiform bands, villiform teeth on vomer, none on palatines. Sub-opercle and post-clavicle enlarged. There are three dorsal, and two anal fins, all well separated from one another; ventral fin somewhat filamentous reaching vent. Vent situated under interspace between first and

second dorsal. Caudal lunated in form. Body olive-brown above, paler below, two interrupted dark stripes running along sides of body. Body attains a length of 900 mm. In Sea of Japan it ranges southwards to the Yamaguti Prefecture, being exceedingly common on east coast of Korea, Hokkaido, Toyama and Niigata; not very common on the Pacific coasts of Japan. This fish swims at depths of upwards of 100 metres. Spawning occurs in shallow waters, during from February to April. The ovary is very much esteemed as food.

Haloporphyrus oidema Tanaka
“Sokohigedara”
PL. XLIX, fig. 5. ×1/3

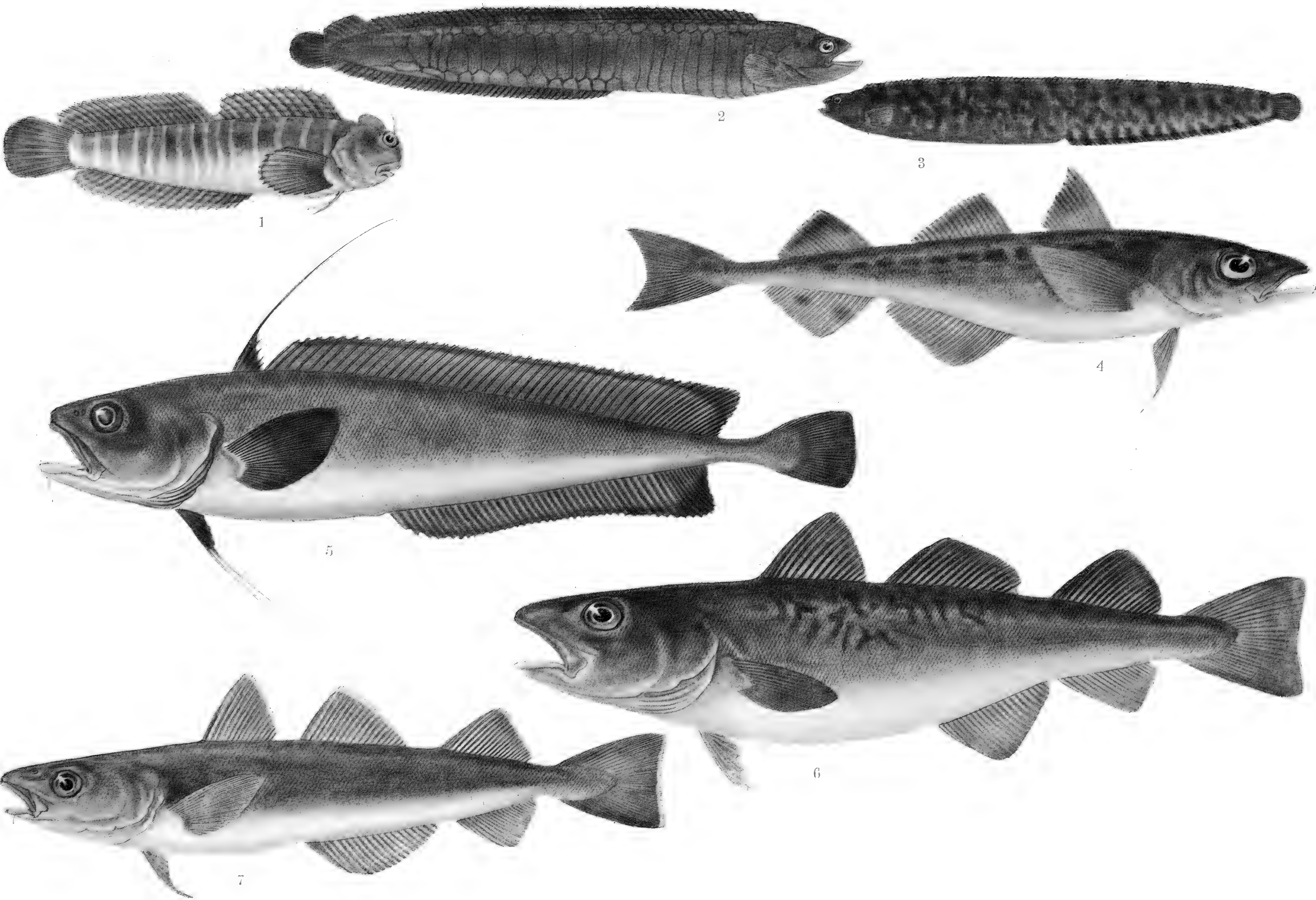
D. 4, 60; scales 200.
Length of body 3 2/3 times that of head, and 4 times depth of body; length of head 4 2/3 times diameter of eye, and 3 1/6 times length of snout. Body elongated, and compressed, deepest part being at insertion of first dorsal. Head rather short, slightly compressed with sub-straight profile; eye large, directed slightly upwards; snout shortish, bluntly pointed. Mouth moderately large, slightly oblique, lower jaw much included; a well developed barbel on chin. Teeth in jaws villiform, in rather broad bands; vomer with a small patch of similar teeth on its head; no teeth on palatines. First dorsal inserted over base of pectoral, first ray filamentous; anal inserted beneath the end of the first quarter of the length of the base of second dorsal. Ventral inserted a little before base of pectoral, some of its rays filamentous. Scale small, cycloid. Brownish, much lighter below. A deep-water fish.

Gadus macrocephalus Tilesius
“Tara”
PL. XLIX, fig. 6. ×1/4

D. 13, 18, 16; A. 21, 17.
Length of body equal to 3 times that of head, and to 4 3/4 times depth of body; length of head equal to 6 times diameter of eye. Body moderately elongated, tapering behind; head and mouth large and lower jaw included, barbel of lower jaw well-developed; teeth in jaws strong, cardiform, arranged in narrow bands; vomer having teeth, there being none on palatines. Lateral line pale. Vent situated below second dorsal fin. There are three dorsal fins, well separated; two anal, also well separated; caudal lunate. Body light-brown above, paler below; back and sides with numerous irregular dark-brown blotches; caudal, and second and third dorsal fins are dasky in colour. It attains to more than 1 metre in length. In Japan it ranges southwards from Kinkazan (near Sendai) on the Pacific coast; also occurs in northern parts of the Sea of Japan and on east coast of Korea. In southern parts it is fished on the sea-bottom at a depth of about 100 fathoms but, in the northern parts mostly at depths of 10 to 40 fathoms; the favourable temperature for the fish is 5° C. The eggs are small, and the adult female yields from 2,000,000 to 3,000,000 eggs according to ther size in from January to February.

Eleginus navaga (Kölreuter)
“Komai”
PL. XLIX, fig. 7. ×1/2

D. 13, 18, 18; A. 22, 20; scales 157.
Length of body 3 1/6 times that of head, and 6 times depth of body, Length of head 5 3/4 times diameter of eye, and 3 times length of snout. Body elongate, the caudal region moderate. Snout conic, sharp, rounded in profile; lower jaw included; maxillary reached vertically to the front of pupil; chin with a minute, barbel. Teeth in jaws slender; teeth on vomer few and the same shaped smaller teeth in upper jaw. Vent under front of second dorsal; pectoral fin not reached to vent; ventrals reaching halfway to vent, the second ray moderately produced; caudal fin slightly emarginated. Scales small, cycloid. Body greyish brown in colour, somewhat mottled. An arctic fish extends its range southwards to Hokkaido. It attains to 300 mm. in length.





ソロイヒゲ
Coelorhynchus parallelus (Günther)
 （第五十圖版　第一圖）　× 1 / 3
D. 10; A. 90.

體長は頭長の31/5倍、體高の61/2倍あり、頭長は眼徑の41/5倍、吻長の21/3倍あり、體は延長し、側扁し第一背鰭の部分最も高し、後方に至るに従ひ、細く細狀をなす。頭部は大きく、強固にして、背外廓は直線的なり、吻は甚だ長く、亞三角形にして、先端尖り、大なる眼の2倍あり、鰭は6乃至7個の棘狀突起を有し、中央縁にあるもの最も長し、頭部は不規則なる棘狀の隆起を有せる鱗にて覆はる、體は紫黒色にして太平洋深海産魚類中普通のものなり、蒲鉾材料に用ゐらる。

ナガツカ
Dinogunellus grigorjewi (Herzenstein)
 （第五十圖版　第二圖）　× 1 / 3
D. LVI; A. I, 43.

體長は頭長の51/6倍、體高の81/2倍あり、頭長は眼徑の131/2倍、吻長の61/2倍あり、體は甚だ延長し、強壯なり、頭は大きく、縦扁し、前端細し、眼は小形にして前方にあり、眼間隔は凹形を呈し、吻は短かく尖れり、口は大きく斜位、下顎は上顎より突出す、齒は帶狀をなし、鋤骨、口蓋骨に齒あり、鰓耙は短かく平たく、剛毛にて覆はる、體は小さき長き、滑かなる鱗にて覆る、體は暗褐色にして、下方淡く、本邦北方の沿岸魚なり、體長400 糎に達す。

イタチウヲ
Brotula multibarbata Temminck & Schlegel
 （第五十圖版　第三圖）　× 1 / 2
D.+C.+A. 186; V. 1; P. 22.

體長は頭長の5倍、體高の4倍乃至41/2倍なり、體は延長し、後方は次第に細まり、尾部は尖れり、體は側扁し、後方に至るに従ひその度著し、頭部及び軀體は小さき圓鱗を有し、各鱗は體に密着せざる柔軟なる皮膚中に埋没せり、兩顎、鋤骨及び口蓋骨に各1列の絨毛齒帶あり、兩顎に各々6條の長き觸鬚を有する事は本種の著しき特徴なりとす、背鰭は胸鰭の基部の垂直線上に始まる、腹鰭は甚だ細長く且各腹鰭は1軟條よりなり、兩腹鰭は相互に接近し、單に先端に於て分離せり、體は帶赤褐色にして、下方は淡く、各鰭の邊緣は稍白し、本種は東京より臺灣に至る深海にて稀に漁獲さる。

ヨロイイタチウヲ
Hoplobrotula armata (Temminck & Schlegel)
 （第五十圖版　第四圖）　× 2 / 3
D. 86; A. 74; scales 112.

體長は頭長の43/5倍、體高の51/4倍なり、頭長は吻長の41/4倍、眼徑の5倍なり、體は延長側扁し、尾部は次第に細長くなりて、後端は尖がれり、吻は鈍く、その前縁外廓は殆ど截形を呈す、兩顎は同長にして、兩顎、鋤骨及び口蓋骨に幅廣き絨毛齒帶あり、前鰓蓋骨に強き3棘を有する事は本種の著しき特徴なりとす、擬鰓は甚だ小なり、頭部前方及び主上顎骨には鱗なし、背鰭及び臀鰭は尾鰭と連続せり、腹鰭は2軟條よりなり、その基底近くに於て分離し、その内方軟條は長し、體は黃赤色或

は桃色を呈し、全體銀色光澤を帶ぶ、背鰭、臀鰭及び尾鰭は暗褐色なり、全長45 糎に達す、深海魚にして、房州及び三崎に普通に産す。

アカグツ
Haliutaea stellata (Vahl)
 （第五十圖版　第五圖）　× 2 / 3
D. 5; A. 3; V. 5; P. 22.

體長は體盤の11/3倍、頭長の11/6倍なり、體盤は甚だ大きく、幅廣く且縦扁し、殆ど圓形を呈し、胸鰭より後方に向つて次第に細まれり、體盤の前縁は昂起せず、口は稍下面にありて、口裂は幅廣く、口の上部には三角形の凹部ありて、その中に1條の強き觸手あり、その觸手は凹部に收縮し得、且二分し、その各先端に擬餌的附屬物あり、兩顎には小き櫛狀齒あるも、鋤骨及び口蓋骨は無齒なり、體の背面には小き星狀棘を散布す、背鰭軟條及び臀鰭は甚だ短く、體の後方にあり、體色背部は黃赤色にして、腹面は桃色を呈す、體長200 糎に達す、東京より長崎に至る深海に稍稀に漁獲さる。

アンコウ
Lophiomus setigerus (Vahl)
 （第五十圖版　第六圖）　× 1 / 2
D. IV+II, 9; A. 7; P. 22; V. 7.

體長は頭長の23/4倍、吻長の91/4倍なり、頭長は頭幅の2倍なり、體は前方に於て甚だ幅廣く且縦扁し、胸鰭基底より後方は急激に細まれり、頭は甚だ大きく幅廣く且縦扁せり、口は著しく大きく、兩顎齒は強く櫛狀を呈し、鋤骨及び口蓋骨にも強き齒あり、鰓耙を缺く、體は無鱗にして、兩顎、口角及び體側に沿ひて多くの皮膚の觸手狀突起あり、第一背鰭棘は長く、第二背鰭棘の11/2乃至12/3倍あり、腸間膜は黒し、體色は灰褐色にして、腹面は白く、背面には淡色點あり、口内前方は黒く、腹鰭は黒からず、本種は我國各地の沿岸に饒産し、稍淺き海底の海藻間或は岩礁上に多し、第一背鰭棘は、甚だ長く、その先端に皮膚性の擬餌的附屬物を有し、その棘を各方面に動かし、以て小魚を誘致し之を捕食す、春季産卵す、肉は甚だ美味なり。

イザリウヲ
Antennarius tridens (Temminck & Schlegel)
 （第五十圖版　第七圖）　×1
D. III, 12; A. 7; V. 5.

體長は頭長の11/10倍、體高の11/5倍なり、頭長は吻長の53/5倍、眼徑の111/5倍なり、體は卵形にして肥厚し、背部に近く側扁するも、腹方は肥大せり、背鰭第三棘の前方に一凹窪あり、口は稍大きく、斜上方に向へり、兩顎、鋤骨及び口蓋骨に櫛齒あり、舌は滑なり、鰓裂甚だ小さく孔狀にして、胸鰭腹部の下部にあり、第一背鰭は先端に餌狀物ありて、之に肉質の總狀物あり、第二及び第三背鰭は相互によく分離し、肉質皮部によりて體に附着す、體には多くの小棘を密布し、處々皮膚性突出物ありて、特に喉部に多し、體色暗灰色にして、褐色及び暗褐色の線を多數に有し、此等の線は鰭に迄及べり、本種は形甚だ變化性に富み、亦體色及び斑紋等も棲息場處によりて大に異れり、全長80 糎に達す、沿岸魚にして南日本に多く、その北端は房州及び三崎附近なり。

Coelorhynchus parallelus (Günther)
“Soroi-hige”
 PL. L, fig. 1.　　× 1 / 3
D. 10; A. 90.

Length of body 31/5 times that of head, and 61/2 times depth of body. Length of head 41/5 times diameter of eye, and 21/3 times length of snout. Body elongated and compressed, its deepest part measured under first dorsal, behind which the body is rather abruptly tapering. Head large, heavy, with sub-straight profile. Snout much produced, sub-trihedral, pointed, nearly twice as long as the large eye. Scales with 5 or even 7 spiny ridges, which are nearly resemble to one another, and of which the middle one is the strongest, terminating in a more or less strongly projecting spine. Head covered all over with irregular, spiny, tubercle-like scales, of which those along the infra-orbital crest and along two lines on each side of the crown of the head are the strongest. Colour purplish black. As one of the commonest species of deep sea *Coelorhynchus* it occurs in Japan.

Dinogunellus grigorjewi (Herzenstein)
“Nagazuka”
 PL. L, fig. 2.　　× 1 / 3
D. LVI; A. I, 43.

Length of body 51/6 times that of head, and 81/2 times depth of body. Length of head 131/2 times diameter of eye, and 61/2 times length of snout. Body much elongated, robust. Head large, greatly depressed, long and pointed. Eyes small, situated far forward, and directed obliquely upwards; inter-orbital space concave; snout shortish, pointed. Mouth large, oblique; lower jaw produced beyond the upper; maxillary extending far beyond eye. Teeth in bands in jaws; vomer and palatines toothed; gill membranes united, extending forward below; gill rakers very short, flat, covered with stiff setae. No filaments on head. Body with minute, elongated, smooth scales. Dark brown above, lighter below. A shore fish of northern Japan.

Brotula multibarbata (Temminck & Schlegel)
“Itati-uwo”
 PL. L, Fig. 3.　　× 1 / 2
D.+C.+A. 186; V. 1; P. 22.

Length of body equal to 5 times that of head, and to 4 to 41/2 times depth of body. Body elongated, tapering backwards and terminating in a point, tail strongly compressed. Head and body covered with minute, cycloid scales, which are embedded in lax skin. There is a row of velvety teeth in jaws, and on vomer and palatines. Each jaw has 6 long barbels. Dorsal and anal fins are continuous around caudal; dorsal inserted over origin of pectoral; ventrals very slender, each composed of one ray only, forked at tip. Body reddish-brown above, paler below; margins of fins rather whitish. This species a deep-sea fish, rarely found offshore, from Tokyo to Formosa.

Hoplobrotula armata (Temminck & Schlegel)
“Yoroi-itatiao”
 PL. L, fig. 4.　　× 2 / 3
D. 86; A. 74; scales 112.

Length of body 43/5 times that of head, and 51/4 times depth of body. Length of head 5 times diameter of eye, and 41/6 times length of snout. Body elongated, compressed, its greatest width much less than the breadth of the head, and tapering into a pointed tail. Head oblong, compressed; snout very blunt; jaws sub-equal; eye small. Maxillary extending far beyond eye. Villiform bands of teeth in jaws, and on vomer and palatines. Pre-operculum with 3 strong spines pro-

truding through the skin. Opercle with a strong spine. A number of mucous pores on head. Scales rather large, cycloid. Head scaleless, except opercles. Light pinkish in colour. A deep sea fish.

Holicutaea stellata (Vahl)
“Akagutu”
 PL. L, fig. 5.　　× 2 / 3
D. 5; A. 3; V. 5; P. 12.

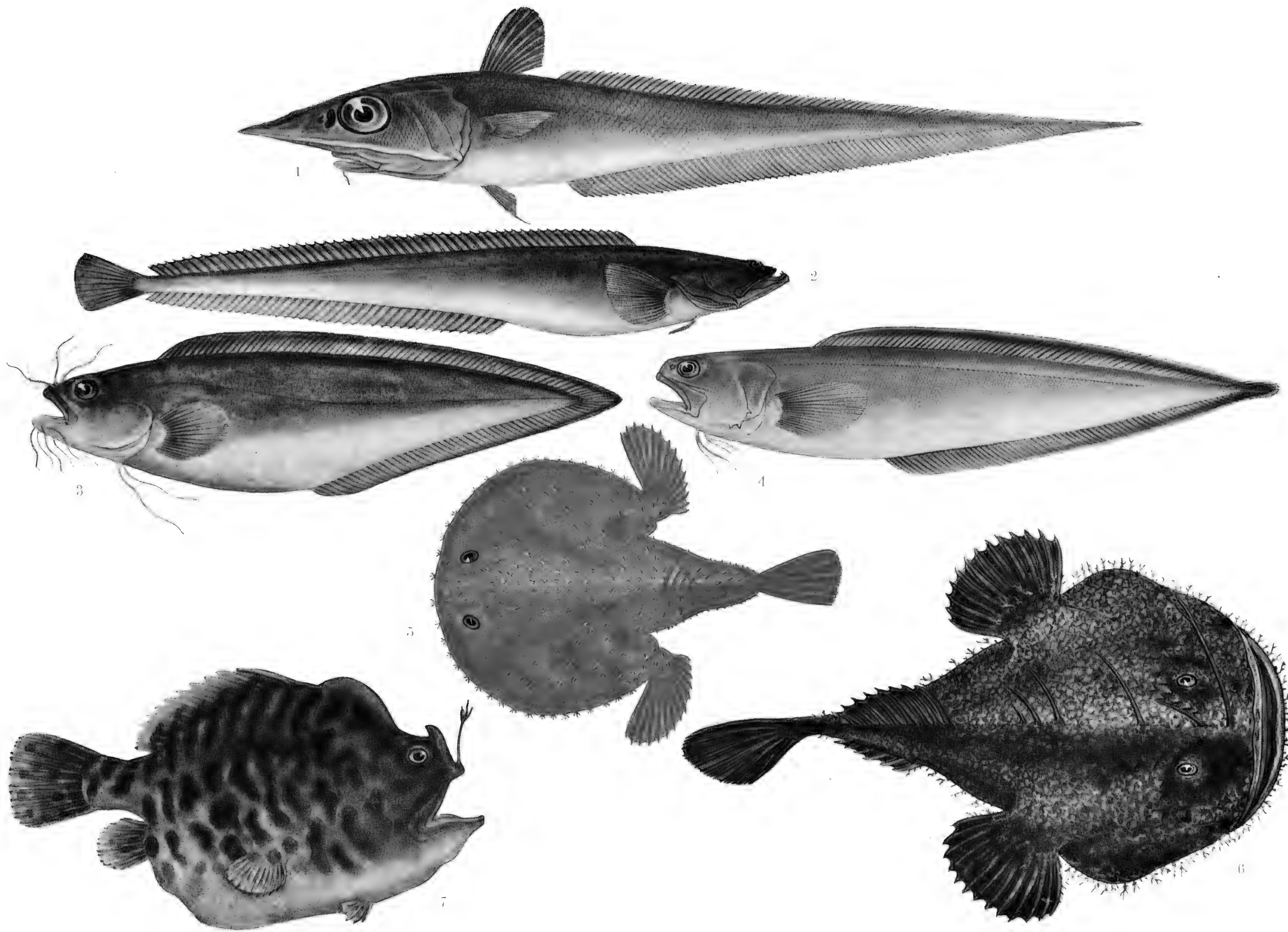
Length of body equal to 11/3 times diameter of disc, and to 11/5 times length of head. Disc very large, depressed, sub-circular with a groove posteriorly, and tapering from pectoral fin towards caudal; frontal region of disc depressed, not elevated. Mouth subinferior, its cleft wide; there is a triangular cavity above the mouth containing a stout tentacle, retractile in a cavity, consisting of two equally divided lobes, with thin fleshy flaps at tip. Jaws with small cordiform teeth, but there are no teeth on vomer and palatines. Body covered with small, stellate spines. Soft dorsal and anal fins very short and set far back. Colour of the body yellowish-red and pinkish on belly. Length attains to 200 mm.; occasionally found in rather deep waters ranging from Tokyo to Nagasaki.

Lophiomus setigerus (Vahl)
“Anko”
 PL. L, fig. 6.　　× 1 / 2
D. IV+II, 9; A. 7; P. 22; V. 7.

Length of body equal to 22/3 times that of head, and to 91/4 times that of snout; length of head twice its width. Body contracted anteriorly and tapering abruptly backwards from shoulder; head very large, broad and depressed. Mouth extraordinarily large; teeth of jaws strong, cordiform and unequal; vomer and palatines with strong teeth. Gill rakers obsolete. Body without scales; there are many dermal flaps on jaws, angle of mouth and sides of body. First dorsal spine longer than second, its length being equal to 11/2 to 12/3 times that of latier. Body brownish-grey above, white on belly; back dotted with many lighter spots, inside of mouth anteriorly black; ventral fins not black. This species found along coasts of Japan, preferring rather shallow bottoms among algae, or in rocky places. First dorsal spine very long and, with a dermal flap. The angler entices unwary fish which are soon engulfed in the enormous mouth. Spawns in Spring. This fish is highly esteemed as food.

Antennarius tridens (Temminck & Schlegel)
“Izari-uwo”
 PL. L, fig. 7.　　×1
D. III, 12; A. 7; V. 5.

Length of body equal to 17/10 times that of head, and to 11/6 times depth of body. Body ovoid, heavy, compressed on back, but tumid on lower part; there is a depression in front of third dorsal spine. Mouth rather large, directed obliquely upwards; there are cordiform teeth in jaws and on vomer and palatines; tongue smooth. Gill openings small, pore-like, in lower axle of pectoral fin. First dorsal fin has a bait with several fleshy knobs; second and third spines well separated from each other, each adnate to body by fleshy skin. Body profusely scattered with small spines; skinny filaments present in places, especially abundant on throat. Body dark grey, profusely streaked with brownish and dark-brown, these extending on all the fins. The species varies in form, and especially in markings to an almost unlimited extent. Total length attains to 80 mm. A littoral fish, rather common in southern Japan, north to Bōsyu.



12

INDEX

	Pl.	fig.
Aburabote...	XVIII	4
Aburahaya...	XVIII	1
Acanthocephala krusensterni...	XXXI	5
Acanthocybium solandri...	XXVII	4
Acanthogobius flavimanus...	XLVII	6
Acheilognathus limbatus...	XVIII	4
Acheilognathus moriokeae...	XIX	8
Acipenser mikadoi...	X	1
aculeata, Aracana...	XLI	6
acutirostris, Evisias...	XXXI	2
acutus, Scoliodon...	VI	4
adonis, Oncorhynchus...	XIV	3
agonashi, Polydactylus...	XXVII	5
Agonasi...	XXVIII	5
agoo, Cypsilurus...	XXI	10
Aigo...	XL	1
Ainame...	XLIII	6
Aka-ei...	IX	5
Akahata...	XXXIII	5
Akagoti...	XLIV	8
Akagutu...	L	5
Aka-isaki...	XXXIV	7
akajei, Dasyatis...	IX	5
Aka-kamasu...	XXI	9
Akamutu...	XXXIV	6
Aka-numeri...	XLVIII	5
Akatati...	XXXI	5
Aka-umigame...	IV	2
Aka-yagara...	XXI	6
Akô...	XLII	4
Alectis ciliaris...	XXVIII	1
Alopias vulpes...	VII	1
altivelis, Callionymus...	XLVIII	5
altivelis, Plectoglossus (mal.)...	XIII	3
altivelis, Plectoglossus (female)...	XIII	4
Amadai...	XXXVII	5
Ameno-uwo...	XIII	1
Ammodytes personatus...	XLVIII	6
Amyda japonica...	IV	5
Anago anago...	XX	6
anago, Anago...	XX	6
analis, Selenanthias...	XXXIV	4
anastomella, Tylosurus...	XXI	8
Anguilla japonica...	XX	3
anguillaris, Plotosus...	XV	1
anguillicaudatus, Misgurnus...	XV	5
anguineus, Chlamydoselachus...	V	3
Ankô...	L	6
Anlacocephalus temminckii...	XXXIII	3
anomala, Psenopsis...	XXX	1
Antennarius tridens...	L	7
Aoara...	XXXIII	2
Ao-kamasu...	XXI	3
Ao-umigame...	IV	1
Ao-yagara...	XXI	5
Ao-zame...	VII	6
Apogon lineatus...	XXX	3
Apogon semilineatus...	XXX	4
Ara...	XXXII	3
Aracana aculeata...	XLI	6
Arctoscopus japonicus...	XLVII	3
argenteus, Stromateus...	XXX	2
argentiventris, Labracoglossa...	XXX	6
argyrophanes, Saurida...	XV	7
aries, Sparus...	XXXV	6
armata, Haplobrotula...	L	4
Asahi-anahaze...	XLIV	7
asakurae, Ophichthus...	XX	8
Asika...	I	3
asotus, Parasilurus...	XV	2
asprerrimum, Clidoderma...	XLVI	3
Astroconger myriaster...	XX	7
Atherina bleekeri...	XXII	3
atrilatus, Leuciscus...	XVIII	1
aurantiacus, Pseudobagrus...	XV	3
auratus, Carassius...	XVI	5
auratus, Carassius "Gengorô-buna"...	XVI	6
auratus, Carassius "Wakin"...	XVII	1

	PL.	fig.
auratus, Carassius "Ryû'in"...	XVII	2
auratus, Carassius "Rantô"...	XVII	3
auratus, Carassius "Oranda-sisigasira"...	XVII	4
auratus, Carassius "Demekin"...	XVII	5
auratus, Carassius "Syûkin"...	XVII	6
auratus, Carassius "Syubunkin"...	XVII	7
Auxis thazard...	XXIV	4
awoara, Epinephelus...	XXXIII	2
Ayatobiwo...	XXI	1
Ayu (male)...	XIII	3
Ayu (female)...	XIII	4
Ayumodoki...	XV	4
Babagarei...	XLV	1
bairdii, Berardius...	III	2
Balaena glacialis...	II	5
Balaenoptera borealis...	II	4
Balaenoptera musculus...	II	2
Balaenoptera physalus...	II	3
Balistes conspicillum...	XL	4
Baramenue...	XLII	3
baramenue, Sebastodes...	XLII	3
barbifer, Cirrhigaleus...	VII	5
barbus, Hemibarbus...	XIX	6
Basyô-kaziki...	XXVI	4
Bembras japonicus...	XLIV	8
Beni-masu...	XII	5
bensasi, Pseudopneus...	XXII	5
Berardius bairdii...	III	2
berycoides, Döderleinia...	XXXIV	6
Beryx splendens...	XXIII	1
bicoloratus, Kareius...	XLVI	5
Binnaga...	XXV	4
biwae, Cobitis...	XV	6
blekeri, Atherina...	XXII	3
Bolopthalmus pectinirostris...	XLVII	7
boops, Scombrops...	XXXII	2
Bora...	XXII	1
borealis, Balaenoptera...	II	4
Bôzugori...	XLVII	2
Branchiostegus japonicus...	XXXVII	5
Brotula multibarata...	L	3
Budai...	XXXVIII	7
bürgeri, Dictyosoma...	XLIX	2
bürgeri, Eptatretus...	V	1
Buri...	XXVIII	5
Caesio chrysozona...	XXXV	4
Callionymus altivelis...	XLVIII	5
Callionymus valenciennesi (male)...	XLVIII	2
Callionymus valenciennesi (female)...	XLVIII	3
Callotaria ursina...	I	1
Calotomus japonicus...	XXXVIII	7
canadum, Rachycentron...	XXII	6
canescens, Zancus...	XXXIX	2
Cantherines modestus...	XL	2
cantonensis, Periopthalmus...	XLVII	1
Caprodon schlegeli...	XXXIV	7
Caranx delicatissimus...	XXIX	4
Caranx equula...	XXIX	2
Caranx helvolus...	XXVIII	2
Caranx sexfasciatus...	XXIX	3
Carassius auratus "Huna"...	XVI	5
Carassius auratus "Gengorô-buna"...	XVI	6
Carassius auratus "Wakin"...	XVII	1
Carassius auratus "Ryûkin"...	XVII	2
Carassius auratus "Rantô"...	XVII	3
Carassius auratus "Oranda-sisigasira"...	XVII	4
Carassius auratus "Demekin"...	XVII	5
Carassius auratus "Syûkin"...	XVII	6
Carassius auratus "Syubunkin"...	XVII	7
Carcharias japonicus...	VI	6
cardinalis, Evynnis...	XXXVI	2
Caretta olivacea...	IV	2
carpio, Cyprinus...	XVI	1
carpio, Cyprinus "Higoi"...	XVI	2
carpio, Cyprinus "Kôhaku-goi"...	XVI	3
cataphractus, Gasterosteus...	XXI	7
cephalus, Mugil...	XXII	1

	PL.	fig.
Setorhinus maximus...	VII	3
Chaetodon modestus...	XXXIX	4
Chalcogramma, Theragra...	XLIX	4
Chelidonichthys kumu...	XLIV	3
Chelonia japonica...	IV	1
Chimaera phantasma...	X	2
chlorostigma, Epinephelus...	XXXIII	6
choerorhynchus, Lethrinus...	XXXV	7
chrysozona, Caesio...	XXXV	4
cinctus, Plectorhynchus...	XXXV	2
cinerus, Muraenesox...	XX	5
ciliaris, Alectis...	XXVIII	1
cirrifer, Monacanthus...	XL	3
cirrighaleus barbifer...	VII	5
Clamydoselachus anguineus...	V	3
Clemmys japonica...	IV	6
Clidoderma asprerrimum...	XLVI	3
Clupea pallasi...	XI	6
Cobitis biwae...	XV	6
Coelorhynchus parallelus...	L	1
Coilia nasus...	X	2
Cololabis saira...	XXI	2
commerson, Cybium...	XXVII	3
conspicillum, Balistes...	XL	4
cordyla, Megalaspis...	XXIX	1
cornutus, Pleuronichthys...	XLVI	4
coronatus, Hypocampus...	XIX	2
Coryphaena hippurus...	XXX	7
cottoides, Pseudoblennius...	XLIV	7
crocodilus, Thysanophrys...	XLIV	2
curta, Hymenophysa...	XV	4
Cybium commerson...	XXVII	3
Cybium koreanum...	XXVII	2
Cynias manazo...	VI	1
Cyprinus carpio...	XVI	1
Cyprinus carpio "Higoi"...	XVI	2
Cyprinus carpio "Kôhaku-goi"...	XVI	3
Cyprinus carpio "Syûsui"...	XVI	4
Cypsilurus agoo...	XXI	10
Cypsilurus poecilopterus...	XXI	1
Daicocus peterseni...	XLIV	6
Dainanginpo...	XLIX	2
Dainan-umihebi...	XX	8
Dasyatis akajei...	IX	5
Datu...	XXI	8
dea, Iniistius...	XXXVIII	5
deani, Heptranchias...	V	4
Decapterus maruadsi...	XXVIII	3
Decapterus muroadsi...	XXIX	7
Decapterus russelli...	XXIX	6
delicatissimus, Caranx...	XXIX	4
Delphinus dussumieri...	III	5
Demekin...	XVII	5
dentex, Osmerus...	XIII	6
Dermochelys schlegeli...	IV	4
Dictyosoma burgeri...	XLIX	2
Dinogunellus grigorjewi...	L	2
Diodon holacanthus...	XLI	4
diphreutes, Heniochus...	XXXIX	3
Ditrema temminckii...	XXXVII	5
djiddensis, Rhynchobatus...	VIII	1
Doderleinia berycoides...	XXXIV	6
Donko...	XLVII	5
Doti-zame...	VI	2
Dozyô...	XV	5
dussumieri, Delphinus...	III	5
Duymaeria flagellifera...	XXXVIII	3
Ebisudai...	XXXVI	3
edita, Evynnis...	XXXVI	3
Edo-abura-zame...	V	4
Eleginus navaga...	XLIX	7
elongata, Ilisha...	X	6
Enedrias nebulosus...	XLIX	3
Engraulis japonicus...	XI	7
Enhydra lutris...	I	4
enoshimae, Salaria...	XLIX	1
Entosphenus japonicus...	V	2
Epinephelus awoara...	XXXIII	2
Epinephelus chlorostigma...	XXXIII	6
Epinephelus epistictus...	XXXIII	1
Epinephelus fasciatus...	XXXIII	5
Epinephelus septemfasciatus...	XXXIII	4
epistictus, Epinephelus...	XXXIII	3

	PL.	fig.
Eptatretus bürgeri...	V	1
equula, Caranx...	XXIX	2
erabo, Microdonophis...	XX	2
Eretomochelys squamosa...	IV	3
esocinus, Pseudogobio...	XVIII	5
Etrumeus micropus...	XI	7
Etu...	X	3
Euthynnus yaito...	XXIV	5
Euthyoptero ma virgatum...	XXXV	3
Evynnis cardinalis...	XXXVI	2
Evynnis edita...	XXXVI	3
Evisias acutirostris...	XXXI	2
fasciatus, Epinephelus...	XXXIII	5
fasciatus, Oplegnathus...	XXXI	3
fimbriata, Scorpaena...	XLIII	2
Fistularia petimba...	XXI	6
Fistularia serrata...	XXI	5
flagellifera, Duymaeria...	XXXVIII	3
flavimanus, Acanthogobius...	XLVII	6
fontinalis, Salvelinus...	XIV	6
fuscescens, Siganus...	XL	1
Gadus macrocephalus...	XLIX	6
Gangi-ei...	IX	1
Gasterosteus cataphractus...	XXI	7
Gengorobuna...	XVI	6
Genrokudai...	XXXIX	4
Germo germo...	XXV	4
germo, Germa...	XXV	4
Gigi...	XV	3
Gin-anago...	XX	6
Ginkagami...	XXXI	4
Ginkame-adi...	XXIX	3
Ginme...	XXIII	5
Ginpo...	XLIX	3
Ginzame...	X	2
Girella punctata...	XXXV	5
Gisu...	X	4
gissu, Pterothrissus...	X	4
glacialis, Balaena...	II	5
gladius, Xiphias...	XXVI	2
glauca, Isuropsis...	VII	6
glauca, Prionace...	VI	5
glauca, Rhachianectes...	II	6
Globocephala scammoni...	III	3
dea, Iniistius...	XIX	7
Gnathopogon mayedae...	XIX	7
Goma-saba...	XXI	1
Gondô-kudira...	III	3
Goniistius zonatus...	XXXVII	7
Gonzui...	XV	1
gorbuscha, Oncorhynchus...	XII	3
grigorjewi, Dinogunellus...	L	2
grigorjewi, Xystrias...	XLV	6
griseus, Malakichthys...	XXXII	1
guamensis, Sebastopsis...	XLIII	3
güntheri, Sebastodes...	XLII	6
Gymnothorax kidako...	XX	1
Hae (female)...	XVIII	5
Hakohugu...	XLI	5
hakuensis, Leuciscus...	XIX	4
hakuensis, Leuciscus...	XIX	5
halichoeres poecilopterus (male)...	XXXVIII	1
halichoeres poecilopterus (female)...	XXXVIII	2
Halieutea stellata...	L	5
Haloporphyrus oidema...	XLIX	5
Hamo...	XX	5
Haokoze...	XLII	4
Hapalogenyis nigripinnis...	XXXV	1
Haplostethus mediterraneus...	XXII	2
Harikazika...	XLIV	1
Harisenbon...	XLI	4
Hasu...	XVIII	7
Hatahata...	XLVII	3
Hatatatedai...	XXXIX	6
Hedai...	XXXV	6
helvolus, Caranx...	XXVIII	2
Hemibarbus barbus...	XIX	6
hemisticta, Pterygotrigla...	XLIV	5
Heniochus diphreutes...	XXXIX	6
Heptranchias deani...	V	4

	PL.	fig.
Heterodontus japonicus...	V	5
Heterodontus zebra...	V	6
Hexagrammos otokii...	XLIII	6
Higai...	XVIII	2
Higai...	XLI	1
Higedai...	XXXV	1
Hige-tuno-zame...	VII	5
Higoi...	XVI	2
Himezi...	XXII	5
Hime-masu...	XIV	3
Hippoglossus stenolepis...	XLV	3
hippurus, Coryphaena...	XXX	7
Hira...	X	6
Hiragasira...	VI	3
Hirame...	XLV	5
Hira-zawara...	XXXVII	2
Hiutidai...	XXIII	2
Hôbô...	XLIV	3
holacanthus, Diodon...	XLI	4
Holocentrus spinosissimus...	XXIII	3
Hon-saba...	XXIV	2
Hoplobrotula armata...	L	4
Hôsekihata...	XXXIII	6
Hosigarei...	XLV	2
Hosi-semihô 6...	XLIV	6
Hosi-zame...	VI	1
Hucho perryi...	XIII	2
Huii-azarasi...	I	2
Huna...	XVI	5
Husakasago...	XLIII	2
Hymenophysa curta...	XV	4
Hypocampus coronatus...	XIX	2
Hypocampus takakurae...	XIX	3
Hypodytes rubripinnis...	XLIII	4
Hypomesus olidus...	XIII	5
Hyporhamphus sajori...	XXI	4
Ibodai...	XXX	1
Ikenago...	XLVIII	6
Isha elongata...	X	6
immaculatum, Ostracion...	XLI	5
indicus, Platycephalus...	XLIV	4
Inegoti...	XLIV	2
Iniistius dea...	XXXVIII	5
Inimicus japonicus...	XLIII	7
irideus, Salmo...	XIV	4
Isaki...	XXXIV	1
Isidai...	XXXI	3
Isigakidai...	XXXI	1
Isigame...	IV	6
Isigarei...	XLVI	5
Isimoti...	XXXVII	3
Isinagi...	XXXII	5
isinagi, Stereolepis...	XXXII	5
Isokasago...	XLIII	3
Istiophorus orientalis...	XXVI	4
Isuropsis glauca...	VII	6
Itati-uwo...	L	3
Itô...	XIII	2
Itohiki-adi...	XXXVIII	1
Itomaki-ei...	IX	2
Itomakihugu...	XLI	6
Itoyori...	XXXV	3
Itto-dai...	XXIII	3
Iwana...	XIV	5
Iwasi-kudira...	II	4
Izari-uwo...	L	7
japonica, Amyda...	IV	5
japonica, Anguilla...	XX	3
japonica, Chelonia...	IV	1
japonica, Clemmys...	IV	6
japonica, Mobula...	IX	2
japonica, Narke...	IX	4
japonica, Polymixia...	XXIII	5
japonica, Pteroplatea...	IX	3
japonica, Rhinoplagusia...	XLVI	6
japonica, Squatina...	VIII	2
japonicus, Arctoscopus...	XLVII	3
japonicus, Bembras...	XLIV	8
japonicus, Branchiostegus...	XXXVII	5
japonicus, Calotomus...	XXXVII	7
japonicus, Carcharias...	VI	6
japonicus, Engraulis...	XI	7
japonicus, Entosphenus...	V	2

	Pl.	fig.
japonicus, Heterodontus ...	V	5
japonicus, Inimicus ...	XLIII	7
japonicus, Lateolabrax ...	XXXII	4
japonicus, Monocentris ...	XXII	4
japonicus, Ostichthys ...	XXIII	6
japonicus, Priacanthus ...	XXIII	4
japonicus, Pristiophorus ...	VIII	1
japonicus, Pseudolabrus ...	XXXVIII	4
japonicus, Scomber "Gomasaba" ...	XXIV	1
japonicus, Scomber "Honsaba" ...	XXIV	2
japonicus, Sieyopterus ...	XLVII	2
japonicus, Stolephorus ...	X	3
japonicus, Trachurus ...	XXIX	5
japonicus, Trichiurus ...	XXVII	6
japonicus, Uranoscopus ...	XLVII	8
japonicus, Zeus ...	XXXVII	6
Jinnara ...	XXXIV	2
joyneri, Sebastodes ...	XLII	1
Kaeru-uwo ...	XLIX	1
Kagokakidai ...	XXXIX	5
Kaiwari ...	XXIX	2
Kama-iruka ...	III	6
Kamasu-zawara ...	XXVII	4
Kamatuka ...	XXIII	3
Kanagasira ...	XLIV	9
Kandai ...	XXXVIII	8
Kanpati ...	XXVIII	6
Karahuto-masu ...	XII	3
Kareius bicoloratus ...	XLVI	5
Kasago ...	XLIII	1
Kasu-zame ...	VIII	2
Katakuti ...	XI	7
Katsuwonus vagans ...	XXIV	3
Katuwo ...	XXIV	3
Kawahagi ...	XL	3
Kawa-masu ...	XIV	6
Kawamutu ...	XIX	9
Kawayatume ...	V	2
kenojei, Raja ...	IX	1
keta, Oncorhynchus (male) ...	XII	1
keta, Oncorhynchus (female) ...	XII	2
Kibinago ...	X	3
Kidai ...	XXXVI	4
kidako, Gymnothorax ...	XX	1
Kihada ...	XXV	3
Kinme-dai ...	XXIII	1
Kisu ...	XXXVII	2
kitaharae, Microstomus ...	XLVI	1
Kitidi ...	XLII	2
Kitune-jai ...	XXXVIII	6
Kiuri-uwo ...	XIII	6
Kiusen (male) ...	XXXVIII	1
Kiusen (female) ...	XXXVIII	2
kiusuanus, Leptocephalus ...	XX	4
Koban-itadaki ...	XLIV	10
Kohakugoi ...	XVI	3
Koi ...	XVI	1
Kokudira ...	II	6
Komai ...	XLIX	7
Komonhata ...	XXXIII	1
Konosiro ...	X	5
Konosirus punctatus ...	X	5
koreanum, Cybium ...	XXVIII	2
Koro-zame ...	VIII	3
Kozyôdai ...	XXXV	2
Koti ...	XLIV	4
krusenterni, Acanthopecta ...	XXXI	5
kumu, Chelidonichthys ...	XLIV	3
Kurakake-gisu ...	XLVIII	1
Kure-anago ...	XX	4
Kurodai ...	XXXVI	5
Kurosui ...	XLII	5
Kusabimanbo ...	XL	5
Kutibidai ...	XXXV	7
Labracoglossa argentiventris ...	XXX	6
lucepedei, Taenioides ...	XLVII	10
Lagenorhynchus obliquidens ...	III	6
Lamna nasus ...	VII	7
Lampris regia ...	XXVII	1
larcha, Phoca ...	I	2
Lateolabrax japonicus ...	XXXII	4
Leioznathus rivulata ...	XXX	5

	Pl.	fig.
Lepidotrigla strauchi ...	XLIV	9
Leptecheneis naucrates ...	XLIV	10
Leptocephalus kiusuanus ...	XX	4
Lethrinus choerorhynchus ...	XXXV	7
Leuciscus atrilatus ...	XVIII	1
Leuciscus hakuensis ...	XIX	4
Leuciscus hakuensis ...	XIX	5
Limanda yokohamae ...	XLVI	2
limbatum, Acheilognathus ...	XVIII	4
lineatus, Apogon ...	XXX	3
Liza menada ...	XXII	2
lobatus, Zalophus ...	I	3
Lophiomus setigerus ...	L	6
lunulata, Pterois ...	XLII	5
lutris, Enhydra ...	I	4
Ma-adi ...	XX	X
Ma-anago ...	XX	7
macrocephalus, Gadus ...	XLIX	6
macrocephalus, Physeter ...	III	1
macrocephalus, Sparus ...	XXXVI	5
macrochir, Sebastodes ...	XLII	2
macropterus, Neothunnus ...	XXV	3
macrostomus, Oncorhynchus ...	XIV	1
macrostomus, Oncorhynchus ...	XV	2
maculata, Mene ...	XXXI	4
Madaï ...	XXXVI	1
Maeso ...	XV	7
Mahugu ...	XLII	2
Maguro ...	XXV	1
Mahata ...	XXXIII	4
Mahaze ...	XLIII	6
Mairuka ...	III	5
Maiwasi ...	XI	2
major, Pagrosomus ...	XXXVI	1
Makaziki ...	XXVI	1
Makkô-kudira ...	I	1
Makogarei ...	XLVI	2
makua, Ranzania ...	XL	5
Malakichthys griseus ...	XXXVI	1
Managatuwo ...	XXX	2
manazo, Cynias ...	VI	1
Manbô ...	XL	6
Mandai ...	XXXVII	1
margaritacea, Sacura ...	XXXIV	5
marmoratus, Sebastiscus ...	XLIII	1
Maru-adi ...	XXVIII	3
maruadi, Decapterus ...	XXVIII	3
Maru-sôdai ...	XXIV	4
masou, Oncorhynchus "Masu" ...	XII	4
masou, Oncorhynchus "Ame-nouwo" ...	XIII	1
Masu ...	XII	4
Masunosuke ...	XII	6
Matodai ...	XXXVII	6
matsubarae, Sebastodes ...	XLII	4
Matukasa-uwo ...	XXI	4
Matukawa-garei ...	XLV	4
mauritanus, Salar ...	XXVIII	4
maximus, Cetorhinus ...	VII	3
mayadae, Gnathopogon ...	XIX	7
Mazaara ...	XXVI	3
mazara, Tetrapterus ...	XXVI	3
Meadi ...	XXVIII	4
Mebaru ...	XLII	6
Mebati ...	XXV	2
Mediro-zame ...	VI	6
mediterraneus, Hoplostethus ...	XXIII	2
Megalopsis cordyla ...	XXIX	1
Megaptera nodosa ...	II	1
Meitagarei ...	XLVI	4
Mekina ...	XXXV	5
Mekaziki ...	XXVI	2
Mekura-unagi ...	V	1
melanostieta, Sardinia ...	XI	2
Menada ...	XXII	2
menada, Liza ...	XX	2
Mene maculata ...	XXXI	4
Microcanthus strigatus ...	XXXIX	5
microdon, Salangichthys ...	XIII	7
Microdonophis erabo ...	XX	2
micropus, Itrumeus ...	XI	5
Microstomus kitaharae ...	XLVI	1
Microstomus sterelli ...	XLV	1
mikadoi, Acipenser ...	X	1

	Pl.	fig.
Minokasago ...	XLIII	5
Misgurnus anguillicaudatus ...	XV	5
Misimaokoze ...	XLVII	8
mitsukurii, Sciaena ...	XXXVII	4
mitsukurii, Squalus ...	VII	4
mitsukurii, Tetrapterus ...	XXVI	1
Mizun ...	XI	3
mizun, Sardinella ...	XI	3
Mobula japonica ...	X	2
modestus, Cantherines ...	XL	2
modestus, Chaetodon ...	XXXIX	4
Mola mola ...	XL	6
mola, Mola ...	XL	6
Monacanthus cirrhifer ...	XL	3
Mongaradôsi ...	XX	2
Mongarahagi ...	XL	4
Monocentris japonicus ...	XXII	4
moriokeae, Acheilognathus ...	XIX	8
Moroko ...	XIX	7
moseri, Veraspar ...	XLV	4
Mugil cephalus ...	XXII	1
multibarbata, Brotula ...	L	3
multifasciata, Neopercis ...	XLVIII	4
Muraenesox cinereus ...	XX	5
Muroadi ...	XXIX	7
muroadi, Decapterus ...	XXIX	7
musculus, Balaenoptera ...	II	2
Musigarei ...	XLV	6
Mutu ...	XXXII	2
Mutugorô ...	XLVII	7
Myliobatis tobiyei ...	IX	6
Myxocephalus polyacanthocephalus ...	XLIV	1
myriaster, Astroconger ...	XX	7
Nagasu-kudira ...	II	3
Nagazuka ...	L	2
Namazu ...	XV	2
Narke japonica ...	IX	4
nasus, Coilia ...	X	7
nasus, Lamna ...	VII	7
naucrates, Leptecheneis ...	XLIV	10
navaga, Eleginus ...	XLIX	7
nebulosa, Squatina ...	VI	1
nebulosus, Medias ...	XLIX	3
Nenbutudai ...	XXX	4
Neko-zame ...	V	5
Neopercis multifasciata ...	XLVIII	4
Neopercis sexfasciata ...	XLVIII	1
Neophocaena phocaenoides ...	III	4
Neothunnus macropterus ...	XXV	3
nerka, Oncorhynchus ...	XII	5
Nezumizame ...	VII	7
Nibe ...	XXXVII	4
Nigoi ...	XIX	6
nigripinnis, Hapalogenys ...	XXXV	1
nigripinnis, Sphyræna ...	XXI	3
Nippon spinosus ...	XXXII	3
niphonum, Scomberomorus ...	XXVI	5
Nisiki-haze ...	XLVII	4
Nisin ...	XI	6
Nizadai ...	XXXIX	1
Nizi-masu ...	XIV	4
Nodokusari (male) ...	XLVIII	2
Nodokusari (female) ...	XLVIII	3
nodosa, Megaptera ...	II	1
Nokogiri-zame ...	VIII	1
Oaka-adi ...	XXIX	6
obliquidens, Lagenorhynchus ...	II	6
obscurus, Odontobutis ...	XLVII	5
obscurus, Tridentiger ...	XLVII	2
Ohagurobera ...	XXXVIII	3
Ohyô ...	XLV	3
oidema, Haloporphyrus ...	XLIX	5
Oikawa (male) ...	XLII	6
Oki-adi ...	XXXVIII	2
Oki-hiragi ...	XXX	5
okinawaensis, Sardinia ...	XI	4
Oki-toragisu ...	XLVIII	4
olidus, Hypomesus ...	XIII	5
olivacea, Carretta ...	IV	2
olivaceus, Paralichthys ...	XLV	5

	Pl.	fig.
Onaga-zame ...	V	1
Oncorhynchus adonis ...	XIV	3
Oncorhynchus gorbusha ...	XII	3
Oncorhynchus keta (male) ...	XII	1
Oncorhynchus keta (female) ...	XII	2
Oncorhynchus macrostomus ...	XIV	1
Oncorhynchus macrostomus ...	XIV	2
Oncorhynchus masou ...	XII	4
Oncorhynchus masou ...	XII	1
Oncorhynchus nerka ...	XII	5
Oncorhynchus tshawytscha ...	XL	6
Oni-adi ...	XXIX	1
Oniokoze ...	XLIII	7
Ophichthus asakusae ...	XX	8
Oplegnathus fasciatus ...	XXXI	3
Oplegnathus punctatus ...	XXXI	1
Opsariichthys uncirostris ...	XLVII	7
Oranda-sisigasira ...	XVII	5
orea, Orcinus ...	III	7
Orcinus orea ...	III	7
orientalis, Istiophorus ...	XXXVI	4
orientalis, Sarda ...	XXV	5
orientalis, Thunnus ...	XXV	1
Osagame ...	IV	4
Osmerus dentex ...	XIII	6
Ostichthys japonicus ...	XXIII	5
Ostracion immaulatum ...	XL	6
otakii, Hexagrammos ...	XLIII	1
Otosei ...	I	1
oxycephalus, Verro ...	XXXVIII	6
oxyrhynchus, Therapon ...	XXXIV	3
Pagrosomus major ...	XXXVI	1
pardalis, Spheroides ...	XL	1
Paralichthys olivaceus ...	XLV	5
pallasii, Clupea ...	XI	6
parallelus, Coelorhynchus ...	L	1
Parapr-stipoma trilineatum ...	XXXIV	1
Parasilurus asotus ...	XV	2
Parathunnus sibi ...	XXV	2
pectinirostris, Boleophthalmus ...	XLVII	7
Periophthalmus cantonensis ...	XLVII	1
Perryi, Hucho ...	XIII	2
personatus, Ammodytes ...	XLVIII	6
peterseni, Daicocus ...	XLIV	6
petimba, Fistularia ...	XXI	6
phantasma, Chimaera ...	X	2
Phoca largha ...	I	2
phocaenoides, Neophocaena ...	III	4
physalus, Balaenoptera ...	II	3
Physeter macrocephalus ...	III	1
pingius, Sphyræna ...	XXI	9
Platax teira ...	XXXIX	3
Platycephalus ...	XLIV	4
platypus, Zacco "Oikawa" ...	XLVIII	5
platypus, Zacco "Hae" ...	XLVII	6
Plecoglossus altivelis (male) ...	XIII	3
Plecoglossus altivelis (female) ...	XIII	4
Plectorhynchus cinctus ...	XXXV	2
Pleuronichthys cornutus ...	XLVI	4
pleuropilos, Upeneus ...	XXII	6
Plotosus anguillar ...	XV	1
pocillopterus, Cypsilurus ...	XXI	1
pocillopterus, Halichoerus (male) ...	XXXVIII	1
pocillopterus, Halichoerus (female) ...	XXXVIII	2
polyacanthocephalus, Myxocephalus ...	XLIV	1
Polydactylus agonashi ...	XXVII	5
Polymixia japonica ...	XXIII	5
porphyreus, Spheroides ...	XL	2
Priacanthus japonicus ...	XXIII	4
Prionace glauca ...	VI	5
Pristiophorus japonicus ...	VIII	1
Psenopsis anomala ...	XXX	1
Pseudobagrus aurantiacus ...	XV	3
Pseudoblennius cottoides ...	XIIV	7
Pseudogobio esocinus ...	XLVIII	3
Pseudolabrus japonicus ...	XXXVIII	4
Pseudopenaeus bensasi ...	XXII	5
Pterogobius virgo ...	XLVII	4
Pterois lunulata ...	XLIII	5
Pteroplatea japonica ...	IX	3

	Pl.	fig.
Pterothrissus gissu ...	X	4
Pterygotrigla hemisticta ...	XLIV	5
pulvius, Salvelinus ...	XIV	5
punctata, Girella ...	XXXV	5
punctatus, Konosirus ...	X	5
punctatus, Oplegnathus ...	XXXI	1
purpurascens, Seriola ...	XXVIII	6
quinqueradiata, Seriola ...	XXVIII	5
Rabuka ...	V	3
Rachycentron canadum ...	XXXI	6
Raja kenoei ...	IX	1
Rakko ...	I	4
Ranzania makua ...	XL	5
regia, Lampris ...	XXVII	1
reticulatus, Semicossyphus ...	XXXVIII	8
Rhachianectes glaucus ...	II	6
Rhe pr sba fujiana ...	XLVII	5
Rhinobatus schlegeli ...	VIII	4
Rhinoplagusia japonica ...	XLVI	6
Rhynchobatus djiddensis ...	VIII	5
rivulata, Leiognathus ...	XXX	5
rubripes, Spheroides ...	XXI	3
rubripinnis, Hypodytes ...	XLIII	4
Rurhata ...	XXXIII	3
russelli, Decapterus ...	XXIX	6
Ryukin ...	XVII	2
Sacura margaritacea ...	XXXIV	5
saira, Cololabis ...	XXI	2
sajori, Hyporhamphus ...	XXI	4
Sakata-zame ...	VIII	4
Sake (male) ...	XII	1
Sake (female) ...	XII	2
Sakura-dai ...	XXXIV	5
Salangichthys microdon ...	XIII	7
Salarias enoshimae ...	XLIX	1
Salmo irideus ...	XIV	4
Salvelinus fontinalis ...	XIV	6
Salvelinus pulvius ...	XIV	5
Samegarei ...	XLVI	3
Samma ...	XXI	2
Sappa ...	XI	1
Sarcocheilichthys variegata ...	XXVIII	2
Sarda orientalis ...	XXV	5
Sardinella mizun ...	XI	3
Sardinella zunasi ...	XI	1
Sardinia melanostieta ...	XI	2
Sardinia okinawaensis ...	XI	4
Sasanoha-bera ...	XXXVIII	4
Saurida argyrophanes ...	XV	7
Sawara ...	XXVI	5
Sayori ...	XXI	4
scalprum, Xesurus ...	XXXIX	1
seammoni, Globocephala ...	III	3
schlegeli, Caprodon ...	XXXIV	7
schlegeli, Dermochelys ...	IV	4
schlegeli, Rhinobatus ...	VIII	4
schlegeli, Sciaena ...	XXXVII	3
schlegeli, Sebastodes ...	XLII	5
schlegeli, Syngnathus ...	XIX	1
Sciaena mitsukurii ...	XXXVII	4
Sciaena schlegeli ...	XXXVII	3
Scoliodon acutus ...	VI	4
Scoliodon walbechmi ...	VI	3
Scomber japonicus ...	XXIV	1
Scomber japonicus "Honsaba" ...	XXIV	2
Scomberomorus nipponium ...	XXVI	5
Scombrops boops ...	XXXII	2
Scorpaena fimbriata ...	XIII	2
scyllum, Triakis ...	VI	2
Sebastiscus marmoratus ...	XLIII	1
Sebastodes baramenue ...	XLII	3
Sebastodes guntheri ...	XLII	6
Sebastodes joyneri ...	XLII	1
Sebastodes mastubarae ...	XLII	4
Sebastodes schlegeli ...	XLII	5

	PL.	fig.
septemfasciatus, Epinephelus...	XXXIII	4
Seriola purpuracens...	XXVIII	6
Seriola quinqueradiata	XXVIII	5
serrata, Fistularia	XXI	5
servus, Therapon	XXXIV	2
setigerus, Lophiomus	L	6
sexfasciata, Neopercis	XLVIII	1
sexfasciatus, Caranx	XXXIX	3
Shyati...	III	7
Shyubunkin	XVII	7
Shyûkin	XVII	6
Shyumoku-zame	VII	2
Shyûsui	XVII	4
sibi, Parathunnus	XXV	2
Sibire-ei	IX	4
Sicyopterus japonicus	XLVII	9
Siganus fuscescens	XL	1
sihama, Sillago	XXXVII	2
Sillago sihama	XXXVII	2
Siira	XXX	7
Sima-adi	XXIX	4
Sima-dozyo	XV	6
Sima-isaki	XXXIV	3
Sima-neko-zame	V	6
Sira-uwo	XIII	7
Sironagasu-kudira	II	2
Sisigasira	XVII	4
Sokohigedara	XLIX	5
Sokohôbô	XLIV	5
solandri, Acanthocybium	XXVII	4
Soroi-hige	L	1
Sparus aries	XXXV	6
Sparus macrocephalus	XXXVI	5
Spheroides pardalis	XLI	1
Spheroides porphyreus	XLI	2
Spheroides rubripes	XLI	3
spliosissimus, Holocentrus	XXIII	3
spincus, Nippon	XXXII	3
splendens, Beryx	XXIII	1
sphyraena nigripinnis	XXI	3
Sphyraena pinguis	XXI	9
Sphyrna zygaena	VII	2
Squalus mitsukurii	VII	4
squamosa, Eretmochelys	IV	3
Squatina japonica	VIII	2
Squatina nebulosa	VIII	3
stellata, Halieutaea	L	5
stelleri, Microstomus	XLV	1
stenolepis, Hippoglossus	XLV	3
Stereolepis isinagi	XXXII	5
Stolephorus japonicus	X	3
strauchi, Lepidotrigla	XLIV	9
strigatus, Microcanthus	XXXIX	5
Stromateus argenteus	XXX	2
Sugi	XXXI	6
Suketôdara	XLIX	4
Sumituki-hanadai	XXXIV	4
Sunameri-kudira	III	4
Suppon	IV	5
Suzuki	XXXII	4
Syngnathus schlegelii	XIX	1
Suzigatuwo	XXV	5
Taenioides lacepedei	XLVII	10
Taimai	IV	3
Taius tumifrons	XXXVI	4
Takabe	XXX	6
Takakura-umitatu	XIX	3
takakurae, Hypocampus	XIX	3
Takanoha-dai	XXXVII	7
Takasago	XXXV	4
Takasago-himedi	XXII	6
Takenokomebaru	XLII	1
Tanago	XIX	8
Tara	XLIX	6
Tatino-uwo	XXVII	6
Tatuno-otosigo	XIX	2
teira, Platax	XXXIX	3
temmincki, Anlacecephalus	XXXIII	3
temmincki, Ditrenna	XXXVIII	1
temmincki, Zacco	XIX	9
Tengudai	XXXI	2
Tensu	XXXVIII	5
Tenzikudai	XXX	3

	PL.	fig.
Tetrapterus mazara	XXVI	3
Tetrapterus mitsukurii	XXVI	1
thazard, Auxis	XXIV	4
Theragra chalcogramma	XLIX	4
Therapon oxyrhynchus	XXXIV	3
Therapon servus	XXXIV	2
Thunnus orientalis	XXV	7
Thysanophrys corcodilus	XLIV	2
Tidai	XXXVI	2
Tikame-kintoki	XXXIII	4
Titibu	XLVII	2
Tobi-ei	IX	6
Tobihaze	XLVII	1
Tobi-uwo	XXI	10
tobiyei, Myliobatis	IX	6
Togari-biragasira	VI	4
Togeuwo	XXI	7
Tôgoro-iwasi	XXII	3
Tongari	VIII	5
Torahugu	XLI	3
Tora-himezi	XXII	7
Trachurus japonicus	XXIX	5
tragula, Upeneus	XXII	7
Triakis scyllium	VI	2
tridens, Antennarius	L	7
Tridentiger (ifaciatus)	XLVII	2
trilineatum, Parapristipoma	XXXIV	1
Trichiurus japonicus	XXVII	6
tsehawytseha, Onchorhynchus	XII	6
Tubakuro-ei	IX	3
Tubame-uwo	XXXIX	3
tumifrons, Taius	XXXVI	4
Tunodasi	XXXIX	2
Tuno-zame	VII	4
Turumaki	XLVI	7
Tuti-kudira	III	2
Tylosurus anastomella	XXI	8
Uba-zame	VII	3
Ugui	XIX	4
Ugui	XIX	5
Umazurahagi	XL	2
Umibuna	XXXII	1
Umitanago	XXXVII	1
Unagi	XX	3
uncirostris, Opsariichthys	XVIII	7
Upeneus pleuropilus	XXII	6
Upeneus tragula	XXII	7
Uranoscopus japonicus	XLVII	8
ursino, Callotaria	I	1
Urume-iwasi	XI	5
Usinosita	XLVI	6
Utubo	XX	1
vagans, Katsuwonus	XXIV	3
valenciennesi, Callionymus	XLVIII	2
(male)		
valenciennesi, Callionymus	XLVIII	8
(female)		
variegatus, Sarcophilichthys	XVIII	2
variegatus, Verasper	XLV	2
Verasper moseri	XLV	4
Verasper variegatus	XLV	2
Verro oxycephalus	XXXVIII	6
virgatum, Euthyopteroma	XXXV	3
virgo, Pterogobius	XLVII	4
vulpes, Alopias	VII	1
Wakasagi	XIII	5
Wakin	XVII	1
walbeehmi, Scoliodon	VI	3
Warasubo	XLVII	10
Xesurus scalpauum	XXVI	1
Xiphias gladius	XLV	6
Xystrias grigorjewi	XXXIX	1
Yaito	XXIV	5
yaito, Euthynnus	XXIV	6
Yamame	XIV	1
Yamame	XIV	2
Yamato-mizun	XI	4
Yanaginusigarei	XLVI	1
Yôti-uwo	XIX	1

	PL.	fig.
yokohamae, Limanda	XLVI	2
Yoroidai	XXIII	6
Yoroi-itatiuwo	L	4
Yokozima-zawara	XXVII	3
Yosikiri-zame	VI	5
Zacco platypus (male)	XVIII	5
Zacco platypus (female)	XVIII	6
Zacco temmincki	XIX	9
Zalophus lobatus	I	3
Zanclus canescens	XXXIX	2
Zatô-kudira	II	1
zebra, Heterodontus	V	6
Zebrias zebrinus	XLVI	7
zebrinus, Zebrias	XLVI	7
Zeus japonicus	XXVIII	6
zonatus, Goniistius	XXXVII	7
zunasi, Sardinella	XI	1
zygaena, Sphyrna	VII	2

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	PL.	fig.
Acanthochitona dephilippi ...	XCI	5
Acanthopeltis japonica ...	XCIX	4
Aclesia freeri ...	XCI	10
abietina, Heterochordaria ...	XCVII	4
adamsii, Soletellina ...	XC	14
Agemaki ...	XC	13
Ahnfeltia concinna ...	XCIX	6
Aimadori ...	XCVII	8
Akagai ...	LXXVIII	10
Akahige-kara-mizinko ...	LXII	2
Akahitode ...	LI	2
Akahosi-yadokari ...	LVII	2
Aka-huzitubo ...	LXI	5
Akakurage ...	XCIV	4
Akamategai ...	LXXXIX	5
Akanisi ...	LXXXIII	6
Aka-sango ...	XCIII	7
Akatuno-gani ...	LVI	1
Aka-uni ...	LIII	7
Akaza ...	LVIII	5
Akkigai ...	LXXX	4
Akoyakai ...	LXXX	3
albocincta, Hydatina ...	LXXVII	9, 10
albus, Malleus ...	LXXX	1
amabilis, Paphia ...	LXXXVI	2
Amamo ...	XCVI	2
Amansii Gelidium ...	XCIX	3
Amikusa ...	XCVII	6
Amphiperas ovum ...	LXXI	15, 16
amphitrita albicostatus, Balanus ...	LXI	4
Amusium japonicum ...	LXXXII	8
Ana-awosa ...	XCVI	4
anatifa, Lepas ...	LXI	1
anatina, Lingula ...	XCII	4
Andon-kurage ...	XCIV	3
angustata, Laminaria ...	XCVIII	10
Anisomysis ijimai ...	LXII	16
annulus, Cypraea ...	LXXI	1, 2, 3
Anodonta japonica ...	LXXXIV	5
Anodonta lauta ...	LXXXIV	6
Anomia cytaeum ...	LXXVIII	3-6
Anthopleura xanthogrammica ...	XCIII	4
Arame ...	XCVII	3, 4
Aranamimagasiwa ...	LXXVIII	3-6
Aranunomegai ...	LXXXVII	6
Arca granosa ...	LXXVIII	13, 14
Arca inflata ...	LXXVIII	10
Arca subrenata ...	LXXVIII	11, 12
Architectonica maxima ...	LXXVII	17, 18
arenatus, Conus ...	LXXX	6
arenaria japonica, Mya ...	LXXXIX	8
argo, Argonauta ...	LXIII	1
Argonauta argo ...	LXIII	1
Argonauta hians ...	LXIII	2
argus, Cypraea ...	LXXI	7, 8
Argus speciosa ...	XC	7, 8
Arisogai ...	LXXXV	12
armata, Mursia ...	LIV	6
arrosor, Pagurus ...	LVII	1
artemisia, Cribrina ...	XCIII	3
Arthrothamnus bifidus ...	XCVIII	7
Asahi-gani ...	LIV	8
Asakusanori ...	C	7
Asari ...	LXXXVI	1
asinina, Haliotis ...	LXVI	4
Asterias calamaria ...	LII	1
Asterias versicolor ...	LII	2
Astrodendrum sagaminum ...	LII	6
Asteropecten Kagoshimensis ...	LI	2
Asteropecten ludwigi ...	LII	4
Astrichypens manni ...	LIII	3
Astropecten scoparius ...	LI	1
Atrina japonica ...	LXXX	6
attenuata, Pinna ...	LXXX	4
attenuatus, Eucalanus ...	LXII	2
augusta, Sapphirina ...	LXII	9, 10
Aurelia aurita ...	XCIV	5
aurisdianae guttatus, Strombus ...	LXIX	13, 14, 15
aurita, Aurelia ...	XCIV	5
Awonori ...	XCVI	3
Awosa ...	XCVI	4
Azumanisiki ...	LXXXII	5, 6

	PL.	fig.
Babagaze ...	XCI	1
Bahun-uni ...	LIII	5
Bakagai ...	LXXXV	6, 7
Bakaika ...	LXV	1
Balanus amphitrita albicos-tatus ...	LXI	4
Balanus tinnabulum rosa ...	LXI	6
barbata, Volsella ...	LXXIX	10, 11, 12
Barbatia decussata ...	LXXVIII	1, 2
Barnea latissima ...	XC	7-9
Beika ...	LXV	3
Bekkoimogai ...	LXXV	8
Benigai ...	LXXXV	2, 3
Benihosimanzyu ...	LIV	7
Benisiridaka ...	LXVII	17, 18
Benisode ...	LXIX	13, 14, 15
Benitake ...	LXXVI	7
beyrichii, Pleurotomaria ...	LXXVII	14
bicyclis, Eisenia ...	XCVII	3, 4
bifidus, Arthrothamnus ...	XCVIII	7
bilocularis, Septifer ...	LXXIX	22, 23, 24
Binghamise Eudarachne ...	XCVI	1
Binosugai ...	LXXXIX	9
Birgus latro ...	LVII	5
Bizen-kurage ...	XCIV	1
Bizin-oitona-mizinko ...	LXII	3
Bosyubora ...	LXXII	3
brevialata, Pteria ...	LXXX	3, 4
Brachytrichia Quoyi ...	XCVII	8
bufo, Tutufa ...	LXVII	5
Bullaria vernicosa ...	LXXVII	15, 16
Bunbukutyagama ...	LIII	4
burchardi, Cardium ...	LXXXVII	2
calamaria, Asterias ...	LII	1
Calappa lophos ...	LIV	5
Cambaroides japonicus ...	LVIII	4
camschatica, Paralithodes ...	LVII	9
Cancellaria spengleriana ...	LXXIV	3
Cancer japonicus ...	LV	3
caput-serpentis Cypraea ...	LXXI	4, 5, 6
Carcinoplag longimanus ...	LVI	7
Cardium burchardi ...	LXXXVII	2
Cardium elongatum ...	LXXXVII	4
Cardium muticum ...	LXXXVII	3
carinatus, Pinaeus ...	LX	4
Cassia cornuta ...	LXX	2, 3
cava, Ecklonia ...	XCVIII	6
Cellana nigrisquamata ...	LXVII	7, 8, 9
Cellana nigrolineata ...	LXVII	4, 5, 6
Cellana toreuma ...	LXVII	1, 2, 3
Ceranium Boydenii ...	XCVII	6
Ceranium Hypnaeoides ...	C	11, 12
Ceratocephale osawai ...	XCII	5-7
Certonardoa semiregularis ...	LI	3
cervicornis, Gloiodeltis ...	C	13
Charonia lampas ...	LXX	1
Charonia tritonis ...	LXXII	3
Charybdis sexdentata ...	LV	2
Charybdis sextentata ...	LVI	4
Charybdea rastonii ...	XCIV	3
Chicoreus ramosus ...	LXXII	3
Chionecetes phalangium ...	LV	5
chiraga, Lambis ...	LXX	6, 7
Chlamys farreri nipponensis ...	LXXXII	5, 6
Chlamys plica ...	LXXXII	3, 4
Chlamys senatoria nobilis ...	LXXXII	7
Chondrus elatus ...	C	4
Chondrus ocellatus ...	C	5, 6
Chorda Filum ...	XCVIII	1
ciliatus, Ibacus ...	LVI	3
circumpicta, Ostrea ...	LXXXI	8
Cladosiphon decipiens ...	XCVII	3
clavigera, Thais ...	LXXXIII	1
Clypeaster japonicus ...	LIII	2
Codakia interrupta ...	XC	11
Codium cylindricum ...	XCVI	5
Codium fragile ...	XCVI	5
Comanthus parvicirra ...	LII	8
compressa, Gracilaria ...	XCIX	12
concinna, Ahnfeltia ...	XCIX	6
conferoides, Gracilaria ...	XCIX	10, 11
conoidalis, Harpa ...	LXXXIV	1, 2
consanguinea, Tellina ...	LXXXV	2, 3

	PL.	fig.
constrica, Sinovacula ...	XC	13
Conus arenatus ...	LXXV	6
Conus ebraeus ...	LXXV	3
Conus fulmen ...	LXXV	8
conus hirasei, Trochus ...	LXXVII	17, 18
Conus litteratus ...	LXXV	7
Conus marmoreus ...	LXXV	1
Conus rattus taitensis ...	LXXV	2
Conus tessellatus ...	LXXV	4
Conus textile ...	LXXV	5
Conus vexillum ...	LXXV	9
Copilia mirabilis ...	LXII	7, 8
Corallium elatio ...	XCII	6
Corallium japonicum ...	XCII	7
Corallium konojoi ...	XCII	5
Corbicula japonica ...	LXXXIII	1, 2
Corbicula leana ...	LXXXIII	5, 6
Corbicula leana orthodontata ...	LXXXIII	7, 8
Corbicula nipponensis ...	LXXXIII	9, 10
Corbicula sardai ...	LXXXIII	3, 4
coreanica, Terebratella ...	XCII	1
coreanicus, Ischinochiton ...	XCII	4
cornuta, Cassis ...	LXX	2, 3
cornutus, Turbo ...	LXXVI	12
crassispina, Helicodaris ...	LII	6
crassitesta, Mytilus ...	LXXIX	16-21
crenulata, Terebra ...	LXXVI	8
Cribrina artemisia ...	XCIII	3
crispata, Zirfaea ...	XC	5, 6
cristagalli, Ostrea ...	LXXXI	6
Cristaria plicata spatiosa ...	LXXXIV	8
cruentus, Spondylus ...	LXXXIII	12, 13
Cryptoplax japonica ...	XCII	6
Cucumaria japonica ...	LI	8
curta, Lithophaga ...	LXXIX	5, 6, 7
curvirostris, Tracoypenaeus ...	LX	7
Cyclina sinensis ...	LXXXVI	8
Cyclops serrulatus ...	LXII	4
cylindricum, Codium ...	XCVI	6
Cymatium parthenopium ...	LXXII	1
Cynthia karasboja ...	LI	5
Cynthia roretzi ...	LI	4
Cypraea annulus ...	LXXI	1, 2, 3
Cypraea argus ...	LXXI	7, 8
Cypraea caput-serpentis ...	LXXI	4, 5, 6
Cypraea mauritiana ...	LXXI	9, 10
Cypraea testudinaria ...	LXXI	13, 14
Cypraea tigris ...	LXXI	11, 12
Cypraeacassis rufa ...	LXX	4, 5
cypsellus, Pteria ...	LXXIX	1, 2
cytaeum, Anomia ...	LXXVIII	3, 4, 5, 6
Dactylometra pacifica ...	XCIV	4
Danbeikisago ...	LXVIII	7, 8, 9
Daphnia morsei var. japonica ...	LXII	11, 12
decagonalis, Laganum ...	LIII	1
decipiens, Cladosiphon ...	XCVII	3
decussata, Barbatia ...	LXXVIII	1, 2
denselamellosa, Ostrea ...	LXXXI	1
dephilippi, Acanthochitona ...	XCII	5
depressus, Macrophthalmus ...	LV	1
depressus, Pseudocentrotus ...	LIII	7
Dentalium hungerfordi ...	LXXVII	12
Dentalium verneedi ...	LXXVII	11
Dentalium weinkauffi ...	LXXVII	13
didyma, Polinices ...	LXVIII	4, 5, 6
Digenea simplex ...	C	14
dimidiata, Terebra ...	LXXVI	7
Diogenes edwardsii ...	LVII	4
diogenes, Pagurus ...	LVII	2
divaricata, Grateloupia ...	C	8
divaricatus, Psammocolon ...	XC	1, 2
Dobugai ...	LXXXIV	6
Dolabella sp. ...	XCII	11
Dorippe dorsipes ...	LIV	1, 2
dorsipes, Dorippe ...	LIV	1, 2
Dosinia japonica ...	LXXXVI	6
douglasiae nipponensis, Unio ...	LXXXVI	1, 2
Ebi-amamo ...	XCVI	1
Ebosi-gai ...	LXI	1
ebraeus, Conus ...	LXXV	3
echinata, Ostrea ...	LXXXI	4, 5
Echiurus uncinatus ...	XCII	9

	PL.	fig.
Ecklonia cava ...	XCVIII	6
Ecklonia kurome ...	XCVIII	5
Ecklonia stolonifera ...	XCVIII	2
edwardsii, Diogenes ...	LVII	4
edwardsii, Paramithrax ...	LVI	2
Edowaru-yadokari ...	LVII	4
Egai ...	LXXXVIII	1, 2
Egonori ...	C	11, 12
Eisenia bicyclis ...	XCVIII	3, 4
elatio, Corallium ...	XCII	6
elatus, Chondrus ...	C	4
elongatum, Cardium ...	LXXXVIII	4
elongata, Tridacna ...	LXXXVIII	2
Enderachne Binghamiae ...	XCVII	1
enerve, Sargassum ...	XCVIII	5
Enkô-gani ...	LVI	7
Enteromorpha sp. ...	XCVI	3
Erimacrus isenbeckii ...	LX	8
Eriocheir japonicus ...	LV	6
erythrostoma, Oliva ...	LXXIV	4, 5
esculenta, Rhopilema ...	XCIV	1
Eucalanus attenuatus ...	LXII	1
Eucheuma muricatum ...	XCVII	7
euglypta, Paphia ...	LXXXVI	3
Euphausia pellucida ...	LXII	14
Euplectella imperialis ...	XCIV	4
Euplectella oweni ...	XCIV	5
Euspongia irregularis ...	XCIV	7
exuta, Xerophora ...	LXIX	3, 4, 5
Ezomategai ...	LXXXIX	4
fang-siano, Polypus ...	LXIII	4
farreri nipponensis, Chlamys ...	LXXXII	5, 6
filicina, Grateloupia ...	C	9
Filum Chorda ...	XCVIII	1
flabelliformis, Gymnogongrus ...	XCIX	5
flabellifera, Melitodes ...	XCIII	1, 2
fragile, Codium ...	XCVI	5
freeri, Aclesia ...	XCII	10
Fulgoraria (Psephaea) pre-vostiana ...	LXXIV	9
Fulgoearia rupestris ...	LXXIV	8
fugax, Persephora ...	LIV	4
fulmen, Conus ...	LXXV	8
furcata, Gloiopeltis ...	C	2
fusiformis, Turbinaria ...	XCVII	2
Fusinus perplexus nagasaki ...	LXXIV	7
Gazami ...	LVI	6
gelatinosa, Grateloupia ...	XCIX	9
Gelidium Amansii ...	XCIX	3
Gelidium japonicum ...	XCIX	2
Gelidium pacificum ...	XCIX	1
gigantea, Haliotis ...	LXVI	1
gigantea discus, Haliotis ...	LXVI	3
gigantea mekai, Haliotis ...	LXVI	2
giganteum, Umbonium ...	LXVIII	7, 8, 9
giganteus, Pericillus ...	LXXXIX	10
Gigartina tenella ...	XCIX	8
gigas, Ostrea ...	LXXXI	2, 3
gigas, Tridacna ...	LXXXVIII	3
Ginnanso ...	XCIX	7
Gloiopeltis ...	C	13
Gloiopeltis furcata ...	C	2
Gloiopeltis tenax ...	C	1
Glycymeris vestita ...	LXXXIX	8, 9
Gokai ...	XCII	8
Gomphina melanaegis ...	LXXXVI	7
gordonis, Solen ...	LXXXIX	5
gouldi, Solen ...	LXXXIX	1, 2
Gracilaria compressa ...	XCIX	12
Gracilaria confervoides ...	XCIX	10, 11
Gracilaria Textorii ...	XCIX	13
grandis, Solen ...	LXXXIX	3
granosa, Arca ...	LXXXVIII	13, 14
Grantessa shimeji ...	XCIV	6
granulatus, Polypus ...	LXIII	6
Grateloupia divaricata ...	C	8
Grateloupia filicina ...	C	9
Grateloupia gelatinosa ...	XCIX	9
Grateloupia lancifolia ...	C	10
grayi, Waldeheimia ...	XCII	3
Gumi-kaimen ...	XCIV	2
Gymnogongrus flabelliformis ...	XCIX	5

	PL.	fig.
gyrata, Kjellmanniella	XCVIII	8
haani, Scyllarus	LVIII	2
Haba-nori	XCVII	1
Habokigai	LXXX	4
Hadaka-hitode	LII	3
haematocheir, Sesarma	LVI	1
Haigai	LXXXVIII	13, 14
Hako-ebi	LVIII	1
Haliotis asinina	LXVI	4
Haliotis gigantea	LXVI	1
Haliotis gigantea discus	LXVI	3
Haliotis gigantea mekai	LXVI	2
Haliotis japonica	LXVI	5
Hamaguri	LXXXVI	4, 5
Hanabira-dakara	LXXI	1, 2, 4
Hanahunori	C	13
Hanamayuki	LXXI	4, 5, 6
Hari-temora-mizinko	LXII	5
Harpa conoidalis	LXXIV	1, 2
Harusyagai	LXXX	4
Hatizyodakara	LXXI	9, 10
Helicodaris crassispina	LIII	6
Hemifusus tuba	LXXIV	6
Heterochordaria abietina	XCVII	4
hians, Argonauta	LXIII	2
Hibarigai	LXXIX	10, 11, 12
Hime-para-kara-mizinko	LXII	6
Himonori	C	10
Hiogi	LXXXII	7
Hippopus hippopus	LXXXVIII	4
hippopus, Hippopus	LXXXVIII	4
Hirakamozigai	LXXXIX	6
hirasei, Onithochiton	XCII	2
Hirasuna-gani	LV	1
Hiratunogai	LXXVII	12
Hirezakyo	LXXXVIII	1
Hirome	XCVI	8
hirsuta, Trichomya	LXXIX	13, 14, 15
Hisi-gani	LV	4
Hisigatamanzyu	LIV	6
Hitiobi	LXXIV	9
Hizaragai	XCII	3
Hiziki	XCVII	2
Holothuria monacaria	LI	7
Hondawara	XCVII	5
Honegai	LXXXII	5
Honkarigane	LXXXVI	2
Horagai	LXXX	4
Hositakara	C	11, 12
Hosozutetubora	LXXXII	2
Hossugai	XCV	1
Hotaruika	LXV	5
Hotategai	LXXXII	2
Hozuki-gai	XCII	2
Hukuro-hunori	C	2
Hunedako	LXIII	2
hungerfordi, Dentalium	LXXVII	12
Hunori	C	2
Hueritoge-amehurasai	XCII	10
Hutomizo-ebi	LX	2
Huzinamako	LI	7
Hyalonema sieboldi	XCII	1
Hydatina albocincta	LXXVII	9, 10
Hydatina physis	LXXVII	7, 8
Hypnaeoides Ceramium	C	11, 12
hypsinotus, Pandalus	LIX	2
Hyriopsis schlegeli	LXXXIV	7
Ibacus ciltatus	LVIII	3
Ibonisi	LXX	1
Ichô-gani	LV	3
Igai	LXXIX	16-21
Igisu	XCVII	6
Idako	LXIII	4
Iidima-ami	LXII	16
ijimai, Anisomysis	LXII	16
Iketyôgai	LXXXIV	7
imperialis, Euplectella	XCV	4
imperialis, Sympasiphaca	LIX	5
Imusi	XCII	9
inflata, Arca	LXXVIII	10
interrupta, Codakia	XC	11
irregularis, Euspongia	XCV	7

	PL.	fig.
Iridaea laminarioides var. cornucopiae	XCIX	7
Isaza-ami	LXII	15
Isaza, Neomysis	LXII	15
Ischinochiton coreanicus	XCI	4
Ise-ebi	LIX	3
isenbeckii, Erimacrus	LV	8
Isidatami-yadokari	LVI	3
Isigai	LXXXIV	1, 2
Isigani	LV	2
Isigani	LVI	4
Isimate	LXXIX	5, 6, 7
Isobana	XCI	1, 2
Isosizimi	LXXXVI	10
Itabogaki	LXXXI	1
Itayagai	LXXXII	1
Itohiki-karamizinko	LXII	1
Itomakihitobi	LXXIV	8
Itome	XCI	5-7
Iwagaki	LXXXI	8
Iyosudare	XC	12
japonica, Acanthopeltis	XCIX	4
japonica, Anodonta	LXXXIV	5
japonica, Atrina	LXXX	6
japonica, Corbicula	LXXXIII	1, 2
japonica, Cryptoplax	XCI	6
japonica, Cucumaria	LI	8
japonica, Dosinia	LXXXVI	6
japonica, Haliotis	LXVI	5
japonica, Laminaria	XCVIII	9
japonica, Laonome	XCI	10
japonica, Liolophura	XCI	3
japonica, Nereis	XCI	8
japonica, Phyllospadix	XCVI	1
japonica, Pleurophyllidia	XCI	9
japonica, Tethya	XCV	2
japonica, Siphonaria	LXXXVII	4, 5, 6
japonicum, Amusium	LXXXII	8
japonicum, Corallium	XCI	7
japonicum, Gelidium	XCIX	2
japonicus, Cambaroides	LVIII	4
japonicus, Cancer	LV	3
japonicus, Clypeaster	LIII	2
japonicus, Eriochelone	LV	6
japonicus, Nephrops	LVIII	5
japonicus, Ophioplocus	LII	5
japonicus, Panulirus	LIX	3
japonicus, Pinnatus	LX	1
japonicus, Stichopus	LI	6
japonicus, Strombus	LXIX	9, 10
jedoensis, Protothaca	LXXXIX	7
joyneri, Pinnatus	LX	5
Kabaminasi	LXXV	9
Kabanori	XCIX	13
Kabuto-gani	LXI	8
kaempferi, Macrocheira	LV	7
Kagamigai	LXXXVI	2
kagoshimensis, Astropecten	LI	6
Kaidako	LXIII	1
Kaihyosai	XCVII	8
Kaininso	C	14
Kakobora	LXXII	1
kamakurana, Laternula	XC	4
Kamenote	LXI	2
Karamatugai	LXXVII	4, 5, 6
karasboja, Cynthis	LI	5
Karasuboya	LI	5
Karasugai	LXXXIV	8
Kasagai	LXXVII	7, 8, 9
Kasipan	LIII	1
Katanori	C	8
Katuwo-ro-ebosi	XCIV	2
Kawanina	LXIX	16
Kazime	XCVIII	6
Kegai	LXXIX	13, 14, 15
Kegaki	LXXX	4, 5
Kehada-hizaragai	XCI	5
Kemusii-hizaragai	XCI	6
Kesuzi-yadokari	LVII	1
Keyari	XCI	10
Kibatake	LXXVI	8
Kibitode	LII	2

	PL.	fig.
Kikunohanagai	LXXXVII	1, 2, 3
Kimen-gani	LIV	1, 2
Kindtii Leptodora	LXII	13
Kinko	LI	8
Kintyakugai	LXXXII	3, 4
Kinugasagai	LXIX	3, 4, 5
Kinuta-agemaki	XC	1, 2
Kirigai	LXAVI	4
Kirinsai	XCVII	7
kishinouyei, Sergestes	LIX	4
Kjellmanniella gyrata	XCVIII	8
Ko-ika	LXV	4
Koma-hozukigai	XCI	1
Kombu	XCVIII	9
Komonori	XCIX	9
Komon-imo	LXXV	6
konojoi, Corallium	XCI	5
Koromogai	LXXIV	3
Kosima-gani	LVI	2
Kotamagai	LXXXVI	7
Kotozi-tunomata	C	4
krusensterni, Solen	LXXXIX	4
Kudamakigai	LXXVI	1
Kuma-ebi	LX	3
Kumanokogai	LXVII	10, 11
Kumasakigai	LXIX	6, 7, 8
Kumo-hitode	LII	5
Kurogai	LXVI	3
Kurohumodoki	LXXV	7
Kuro-huzitubo	LXI	6
Kuroiso-kaimen	XCV	3
Kurome	XCVIII	5
kurome, Ecklonia	XCVIII	5
Kurominasi	LXXV	1
Kurosuzi-momizigai	LI	2
Kurotyogai	LXXX	2
Kuruma-ebi	LX	1
Kuzyakugai	LXXXIX	22, 23, 24
Kyonohimo	C	10
lacinata, Parthenope	LV	4
lacunosus, Schizaster	LIII	4
Laganum decagonalis	LIII	1
Lambis Chiraga	LXX	6, 7
lamellaris, Venus	LXXXVII	1
Laminaria angustata	XCVIII	10
Laminaria japonica	XCVIII	9
laminarioides var. cornucopiae, Iridaea	XCIX	7
lampas, Charonia	LXII	3
Lanceolaria oxyrhyncha	LXXXIV	3, 4
lancifolia, Grateloupia	C	10
Laonome japonica	XCI	10
laqueatus, Pecten	LXXXII	1
Laqueus rubellus	XCI	2
Laternula kamakurana	XC	3, 4
latissima, Barnea	XC	7, 9
latisulcatus, Pinnatus	LX	2
Latreillia valida	LVI	3
latro, Birgus	LVII	5
lauta, Anodonta	LXXXIV	6
leana, Corbicula	LXXXIII	5, 6
leana orthodonta, Corbicula	LXXXIII	7, 8
Lepas anatifera	LXI	1
Leptodora kindtii	LXII	13
Leucosides longifrons	LIV	3
leucotrapis, Turris	LXXVI	1
Liagore rubromaculatus	LIV	7
libertina, Semisulcospira	LXIX	16
Lingula anatina	XCI	4
Linuparus trigonus	LVIII	1
Liolophura japonica	XCI	3
Lithophaga curta	LXXIX	5, 6, 7
litteratus, pardus, Conus	LXXV	7
longifrons, Leucosides	LIV	3
longimanus, Carcinoplax	LVI	7
longispira, Viviparus	LXIX	2
lophos, Calappa	LIV	5
ludwigi, Astropecten	LII	4
luhuanus, Strombus	LXIX	11, 12
luteo venulosa, Tellina	LXXXV	1
Lutraria maxima	LXXXV	8
Lutraria sieboldii	LXXXIX	6

	PL.	fig.
Mabe	LXXX	5
Maboya	LI	4
Macrobrachium nipponense	LIX	1
Macrocallista	LXXXVI	11
Macrocheira kaempferi	LV	7
Macrophthalmus depressus	LV	1
macroptera, Pteris	LXXX	5
Mactra sachalinensis	LXXXV	11
Mactra spectabilis	LXXXV	12
Mactra sulcata	LXXXV	6, 7
Mactra veneriformis	LXXXV	9, 10
maculate, Terebra	LXXVI	6
Madaka	LXVI	1
Madaka	LXIII	5
Madaraimo	LXXXV	3
Makaki	LXXXV	2, 3
Magakigai	LXIX	11, 12
Mahunori	C	1
Maikani	LXV	4
Makimizoguruma	LXXXVII	17, 18
Makkwan-gani	LVII	5
Makombu	C	14
Makuri	LXIX	1
malleatus, Viviparus	LXIX	1
Malleus albus	LXXX	1
Manbogi	LXX	4, 5
manni, Astrichypens	LIII	3
margaritifera, Pinctada	LXXX	2
marina, Zostera	XCVI	2
marmoratus, Turbo	LXVIII	10
marmoratus, Conus	LXXX	1
martensii, Pinctada	LXXX	3
Marutani	LXIX	1
Marutunogai	LXXXVII	11
Masizimi	LXXXIII	5, 6
Mastigias papua	XCIV	6
Mategai	LXXXIX	1, 2
Matumo	XCIV	4
Matuyamawasure	LXXXVII	11
maxima, Architectonica	LXXXVII	17, 18
mauritanica, Cypraea	LXXI	7, 10
maxima, Lutraria	LXXXV	8
Maximodora	C	9
Medama-umi-mizinko	LXII	7, 8
Megai	LXVI	2
melanesis, Gomphina	LXXXVI	7
Melitodes flabellifera	XCI	1, 2
menstrualis, Sunettina	LXXXVI	9
Mercenaria stimpsoni	LXXXIX	9
Meretrix meretrix	LXXXVI	4, 5
meretrix, Meretrix	LXXXVI	4, 5
Meristotheca papulosa	C	15
Midori-isogintyaku	XCI	3
Mimigai	LXVI	4
mirabilis, Copilia	LXII	7, 8
Miru	XCVI	5
Mirukui	LXXXV	13
Misakiguruma	LXXXVII	17, 18
Misugai	LXXXVII	7, 8
Mitella mitella	LXI	2
mitella, Mitella	LXI	2
Mituisi-Kombu	XCVIII	10
Mizinko	LXII	11, 12
Mizukurage	XCIV	5
Mokuyoku-kaimen	XCV	7
Mokuzu-gani	LV	6
Momizigai	LI	1
Momoiro-ebi	LIX	2
Momoiro-sango	XCI	6
monacaria, Holothuria	LI	7
monoceros, Pinnatus	LX	6
morsei var. japonica, Daphnia	LXII	11, 12
Mosiwo-gusa	XCVI	2
Mozuku	XCVII	3
Murakumo-dakara	LXXI	13, 14
Murasakigai	XC	14
Murasaki-momizigai	LII	4
Murasaki-uni	LII	6
Murex tiremis	LXXXIII	5
Murex trocheli	LXXXIII	4
muricatum, Eucheuma	XCVII	7
Mursia armata	LIV	6
muscaria, Terebra	LXXXVI	3
Musiroimomodoki	LXXXV	2

	PL.	fig.
muticum, Cardium	LXXXVII	3
Mya arenaria japonica	LXXXIX	8
Mytilus crassitesta	LXXXIX	16-21
Nagakombu	XCVIII	10
Nagamiru	XCVI	6
Naganisi	LXXIV	7
Nagatanisi	LXIX	2
Nagatunomata	C	4
Nagazarugai	LXXXVII	4
Nagazyako	LXXXVIII	2
Namako	LI	6
Naribirasizimi	LXXXIII	7, 8
Natunogai	LXXXVII	15, 16
Navicula navicularis linter	LXXXVIII	7, 8, 9
Nekoasi-kombu	XCVIII	7
Nemalion vermiculare	C	3
Neomysis isaza	LXII	15
Nephrops japonicus	LVIII	5
Nereis japonica	XCI	8
nigrolineata, Cellana	LXVII	4, 5, 6
nigrisquamata, Cellana	LXVII	7, 8, 9
Nihogai-modoki	XC	5, 6
Nihonsizimi	LXXXIII	9, 10
Nikko-gai	XC	10
nitidula, Trochus	LXVII	15, 16
nipponensis, Corbicula	LXXXIII	9, 10
nipponense, Macrobrachium	LIX	1
Nisiki-hizaragai	XCI	2
nitidula, Tellina	LXXXV	4, 5
Nokoba-kenmizinko	LXII	4
Nokogiri-gazami	LVI	5
Nori	C	7
Noro	LXII	13
Nunomegai	LXXXVII	5
nuttalli, Schizothaerus	LXXXV	13
Obusa	XCIX	1
ocellatus, Chondrus	C	5, 6
oen-kairō-dōketu	XCV	5
Ōera-umi	XCI	7, 8
Ogonori	XCIX	10, 11
Oithona plumifera	LXII	3
okada, Reniera	XCIV	3
Okinaebisu	LXXXVII	14
Okisizimi	LXXXVI	8
Okitunori	XCIX	5
Okuri-gani	LV	8
Okyudo	C	11, 12
Oliva erythrostoma	TXXIV	4, 5
olivacea, Sanguinolana	LXXXVI	10
Omate	LXXXIX	3
Onarutobora	LXXXII	5
Oniasari	LXXXIX	7
Onikusa	XCIX	2
Oninisi	LXXIV	6
Onithochiton hirasei	XCI	2
Onogai	LXXXIX	8
Ophioplocus japonicus	LII	5
oratoria, Squilla	LXI	7
asawai, Ceratocephale	XCI	5-7
Ostrea circumpecta	LXXXI	8
Ostrea cristagalli	LXXXI	6
Ostrea denselamellosa	LXXXI	1
Ostrea echinata	LXXXI	4, 5
Ostrea gigas	LXXXI	2, 3
Ostrea rivularis	LXXXI	7
Otome-kaigara-mizinko	LXII	9, 10
Otorigai	LXXXV	8
ovum, Amphiperas	LXXI	15, 16
oweni, Euplectella	XCIV	5
oxyrhyncha, Lanceolaria	LXXXIV	3, 4
Pacifica, Dactylometra	XCIV	4
pacifica, Macrocallista	LXXXVI	11
pacificum, Gelidium	XCIX	1
Pagurus arrosor	LVII	1
Pagurus diogenes	LVII	2
Pagurus setifer	LVII	3
pallidula, Xenophora	LXIX	6, 7, 8
Pandalus hypsinotus	LIX	2
Panulirus japonicus	LIX	3

	PL.	fig.
Paphia amabilis	LXXXVI	2
Paphia euglypta	LXXXVI	3
Paphia philippinarum	LXXXVI	1
Paphia undulata	XC	12
papua, Mastigias	XCIV	6
papulosa, Meristotheca	C	15
Paracalanus parvus	LXII	6
Paralithodes camtschatica	LVII	6
Paramithrax edwardsii	LVI	2
Parthenope laciniate	LV	4
parthenopeum, Cymatium	LXXII	1
parvicirra, Comanthus	LIII	8
parvus, Paracalanus	LXII	6
Patelloida saccharina	LXVII 12, 13, 14	1
Pecten laqueatus	LXXXII	1
Pecten yessoensis	LXXXII	2
pellucida, Euphausia	LXII	14
Pennaeus japonicus	LX	1
Pennaeopsis monoceros	LX	6
perdix, Tonna	LXX	1
Pericillius giganteus	LXXXIX	10
perplexus, Fusinus	LXXXIV	7
persica, Thais	LXXXIII	2
Persephora fugax	LIV	4
petholatus, Turbo	LXVIII	11
pertusa, Ulva	XCVI	4
phalangium, Chionece	LV	5
Phalium pila	LXXII	2
philippinarum, Paphia	LXXXVI	1
Phopilema esculenta	XCIV	1
Phylloderma sacrum	XCVII	9
Phyllospadix japonica	XCVI	1
Physalia utriculus	XCIV	2
physis, Hydatina	LXXXVII	7, 8
pila, Phalium	LXXII	2
Pinnatus carinatus	LX	4
Pinnatus joyneri	LX	5
Pinnatus latisulcatus	LX	2
Pinnatus semisulcatus	LX	3
Pinctada margaritifera	LXXX	2
Pinctada martensii	LXXX	3
Pinna attenuata	LXXX	4
Pinnatifida undaria	XCVI	7
Placiphorella sp.	XCI	1
Pleurophyllidia japonica	XCI	9
Pleurostomaria beyrichi	LXXXVII	14
plica, Chlamys	LXXXII	3, 4
plicataspatisa, Cristaria	LXXXIV	8
plumifera, Oithona	LXII	3
Polinices didyma	LXVIII	4, 5, 6
Polinices sagamiensis	LXVIII	1, 2, 3
Polypus fang-siano	LXIII	4
Polypus granulatus	LXIII	6
Polypus variabilis	LXIII	3
Polypus vulgaris	LXIII	5
Porphyra tenera	C	7
Portunus trituberculatus	LVI	6
pretiosus, Pseudarchaster	LII	3
prevostiana, Fulgoraria (Psephaea)	LXXIV	9
Protothaca jodoensis	LXXXIX	7
Psammosolen divaricatus	XC	1, 2
Pseudarchaster pretiosus	LII	3
Pseudocentrotus depressus	LIII	3
Pteria brevilata	LXXIX	3, 4
Pteria cypsellus	LXXIX	1, 2
Pteria macropteria	LXXX	5
puerpera, Venus	LXXXVII	5
pulcherrimus, Strongylocentrotus	LIII	5
purpuratus, Saxidomus	LXXXVII	5
Quoyi Brachytrichia	XCVII	8
ramosus, Chicoreus	LXXIII	3
ranina, Ranina	LIV	3
Ranina ranina	LIV	3
Rapana thomasiiana	LXXIII	3
rastonii, Charybdea	XCIV	3
rattus taitensis, Conus	LXXV	3
regius, Spondylus	LXXXIII	1
Reniera okadai	XCV	3
reticulata, Venus	LXXXVII	5
rivularis, Ostrea	LXXXI	3

	PL.	fig.
roretzi, Cynthia	LI	4
rubellus, Laqueus	XCH	2
rubromaculatus, Liagore	LIV	7
rufa, Cypraecassis	LXX	4, 5
rupestris, Fulgoraria	LXXIV	8
Ryukyutake	LXXVI	6
Ryukyu-tunomata	XCVII	7
Ryuten	LXVIII	11
saccharina, Patelloida	LXVII 12, 13, 14	
sachalinensis, Mactra	LXXXV	11
sacrum, Phylodermna	XCVII	9
sagamiensis, Polinices	LXVIII 1, 2, 3	
sagaminum, Astrodendrum	LII	6
Saimi	XCIX	6
Sakura-ebi	LXI	4
Sakuragai	LXXXV	4, 5
Sanadamizuhiki-gani	LVI	3
sandai, Corbivula	LXXXIII	8, 4
Sanguinolaria olivacea	LXXXVI	10
Sapphirina augusta	LXII	9, 10
Saragai	LXXXV	1
Sarasabatei	LXXXV 15, 16	
Sargassum enerve	XCVII	5
Sarubô	LXXXVIII 11, 12	
Saru-ebi	LX	7
Sasanoha	LXXXIV	3, 4
Satuma-akagai	LXXXVI	2
Satuma-asari	LXXXVII	1
Saxidomus purpuratus	LXXXVII	7
Sazae	LXVIII	12
Scalpellum stearnsii	LXI	3
Schizaster lacunosus	LIII	4
Schizothaerus nuttalli	LXXXV	13
schlegeli, Hyriopsis	LXXXIV	7
scoparius, Astropecten	LI	1
Scylla serrata	LVI	5
Scyllarus haani	LVIII	2
Semi-ebi	LVIII	2
semiregularis, Certonardoa	LI	3
semis catus, Pinacus	LX	3
Semisulcospira libertina	LXIX	16
senatoria novilis, Chlamys	LXXXII	7
Septifer bilocularis	LXXXIX 22, 23, 24	
Sergestes kishinouyei	LIX	4
serrata, Scylla	LVI	5
serulatus, Cyclops	LXII	4
Sesarma haematocheir	LVI	1
Setasizimi	LXXXIII	3, 4
setifer, Pagurus	LVII	3
sexdentata, Charybdis	LVI	4
sexdentata, Charybdis	LV	2
shimeji, Grantessa	XC	6
Shyagô	LXXXVIII	4
Siba-ebi	LX	5
Sidoro	LXIX	9, 10
sieboldi, Hyalonema	XC	1
sieboldii, Lutraria	LXXXIX	6
simplex, Digenea	C	14
sinensis, Cyclina	LXXXVI	8
Sinovacula constricta	XC	13
Sinzugai	LXXX	3
Siohuki	LXXXV	9, 10
Siphonaria japonica	LXXXVII	4, 5, 6
Siphonaria sirius	LXXXVII	1, 2, 3
Siramo	XCIX	12
Siranami	LXXXVIII	2
Siratamatubaki	LXVIII	1, 2, 3
Siriella watasei	LXII	17
sirius, Siphonaria	LXXXVII	1, 2, 3
Siro-sango	XCH	5
Sirosuzi-huzitubo	LXI	4
Solen grandis	LXXXIX	3
Solen gordonis	LXXXIX	5
Solen gouldi	LXXXIX	1, 2
Solen krusensterni	LXXXIX	4
Soletellina adamsii	XC	14
Sotôri-gai	XC	3, 4
speciosa, Argus	XCI	7, 8
spectabilis, Mactra	LXXXV	12
spengleriana, Cancellaria	LXXIV	3
Spondylus cruentus	LXXXII	12, 13
Spondylus regius	LXXXIII	11
squamosa japonica, Tetracita	LXI	6

	PL.	fig.
squamosa, Tridacna	LXXXVIII	1
Squilla oratoria	LXI	7
stearnsii, Scalpellum	LXI	3
Stichopus japonicus	LI	6
stimpsoni, Mercenaria	LXXXIX	9
stolonifera, Ecklonia	XCVIII	2
Strombus aurisdianae		
guttatus	LXIX 13, 14, 15	
Strombus japonicus	LXIX	9, 10
Strombus luhuanus	LXIX	11, 12
Strongylocentrotus pulcherri-		
mus	LIII	5
stylifera, Temora	LXII	5
subcrenata, Arca	LXXXVIII 11, 12	
subulata, Terebra	LXXXVI	9
Sudaregai	LXXXVI	3
Suginori	XCIX	8
Suisyo-ami	LXII	14
Suizenzinori	XCVII	9
Suizigai	LXX	6, 7
Sukasi-kasipan	LIII	3
sulcataria, Mactra	LXXXV	6, 7
Suminoegaki	LXXXI	7
Sunadako	LXIII	6
Sunettina menstraalis	LXXXVI	9
Suzi-ika	LXV	2
Syako	LXI	7
Syako	LXXXVIII	3
Syamisen-gai	XCH	4
Syokkora	LXXXIV	1, 2
Syôzyôgai	LXXXIII	11
Syumokugai	LXXX	1
Sympasiphaea imperialis	LIX	5
Syôzyô-ebi	LIX	5
Tachypleus tridentatus	LXI	8
Tagai	LXXXIV	5
Tagayasanminasi	LXXV	5
Tairagi	LXXX	6
Taka-asigani	LV	7
Takenokogai	LXXXVI	9
Takokurage	XCIV	6
Takonomakura	LIII	2
Tamakigai	LXXXIX	8, 9
Taraba-gani	LVII	6
Tatesuzi-hozukigai	XCH	3
Tatezima-umiusi	XCI	9
Tatunami-gai	XCI	11
Tegula xanthostigma	LXVII	10, 11
Tellina consanguinea	LXXXV	2, 3
Tellina lutea venulosa	LXXXV	1
Tellina nitidula	LXXXV	4, 5
Tellina virgata jubar	XC	10
Temora stylifera	LXII	5
Tenagadako	LXIII	3
Tenaga-ebi	LIX	1
Tenagakobusigani	LIV	4
tenax, Gloiopeltis	C	1
tenella, Gigartina	XCIX	8
tenera, Porphyra	C	7
Tengugai	LXXXIII	3
Tengusa	XCIX	3
Terebra crenulata	LXXXVI	8
Terebra dimidiata	LXXXVI	7
Terebra maculata	LXXXVI	6
Terebra muscaria	LXXXVI	3
Terebra subulata	LXXXVI	9
Terebra torquata	LXXXVI	5
Terebra triseriata	LXXXVI	4
Terebratella corcanica	XCH	1
tessulatus, Conus	LXXV	4
testudinaria, Cypraea	LXXX 13, 14	
Tethya japonica	XC	2
Tetracita squamosa japonica	LXI	6
textile, Conus	LXXV	5
Textorii Gracilaria	XCIX	13
Thais clavigera	LXXXIII	1
Thais persica	LXXXIII	2
thomasiana, Rapana	LXXXIII	6
tigris, Cypraea	LXXI	11, 12
tinabulum rosa, Balanus	LXI	5
Tiribotan	LXXXIII	12, 13
Tschakanori	C	5, 6
Tokamuri	LXX	2, 3

	PL.	fig.
Tokobusi	LXVI	5
Tonna perdix	LXX	1
Torahumanzyu	LIV	5
tozuma, Cellana	LXVII 1, 2, 3	
Torigai	LXXXVII	3
Torinoasi	XCIX	4
Tororo-kombu	XCVIII	8
torquata, Terebra	LXXXVI	5
Tosakagaki	LXXXI	6
Tosakanori	C	15
Trachypenaeus curvirostris	LX	7
Trichomya hirsuta	LXXXIX 13, 14, 15	
Tridacna elongata	LXXXVIII	2
Tridacna gigas	LXXXVIII	3
Tridacna squamosa	LXXXVIII	1
tridentatus, Tachypleus	LXI	8
trigonus, Linuparus	LVIII	1
trimeris, Murex	LXXIII	5
triseriata, Terebra	LXXXVI	4
tritonis, Charonia	LXXXI	4
trituberculatus, Portunus	LVI	6
trocheli, Murex	LXXXIII	4
Trochus conus hirasei	LXXXI 17, 18	
Trochus niloticus	LXVII	15, 16
tuba, Hemifusus	LXXXIV	6
Tubamegai	LXXXIX	1, 2
Tubosimezikaimen	XC	6
Tukihigai	LXXXII	8
Tumetagai	LXVIII	4, 5, 6
Tunogai	LXXXVII	13
Tunokamenote	LXI	3
Tunomata	C	5, 6
Tunonagakobusi-gani	LIV	6
Turbinaria fusiformis	XCVII	2
Turbo cornutus	LXVIII	12
Turbo marmoratus	LXVIII	10
Turbo petholatus	LXVIII	11
Turris leucotropis	LXXXVI	1
Turris unedo	LXXXVI	2
Turuarame	XCVIII	2
Turuboso-tezuru-nozuru	LII	6
Turumo	XCVIII	1
Tutufa bufo	LXXXI	5
Tutugaki	LXXXIX	10
Ubagai	LXXXV	11
Uguisugai	LXXXIX	3, 4
Ulva pertusa	XCVI	4
Umisida	LIII	8
Umbonium giganteum	LXVIII	7, 8, 9
Umitake	XC	7, 8, 9
Umisagi	LXXXI	15, 16
Umizomen	C	6
Undaria pinnatifida	XCVI	7
Undaria undarioides	XCVI	8
undarioides, Undaria	XCVI	8
undulata, Paphia	XC	12
unedo, Turris	LXXXVI	2
unicinctus, Echiurus	XCII	9
Unio douglasiae nipponensis	LXXXIV	1, 2
Unoasi	LXVII 12, 13, 14	
Uraki-tukigai	XC	11
Urasima	LXXXII	2
Usi-ebi	LX	4
Usinotume	LXVII	4, 5, 6
Usinotunogai	LXXXVI	3
Utimurasaki	LXXXVII	7
Utiwa-ebi	LVIII	3
utriculus, Physalia	XCIV	2
valida, Latreilla	LVI	3
variabilis, Polypus	LXIII	3
veneriformis, Mactra	LXXXV	9, 10
Venus lamellaris	LXXXVII	1
Venus puerpera	LXXXVII	5
Venus reticulata	LXXXVII	6
vermiculare, Nematolion	C	3
vernedi, Dentalium	LXXXVII	11
vernica, Bullaria	LXXXVII	15, 16
versicolor, Asterias	LII	2
vestita, Glycymeris	LXXXIX	8, 9
vexillum, Conus	LXXV	9
virgata jubar, Tellina	LC	10
Viviparus longispira	LXIX	2

	PL.	fig.
Viviparus malleatus	LXIX	1
Volsella barbata	LXXXIX 10, 11, 12	
vulgaris, Polypus	LXIII	5
Wakame	XCVI	7
Waldeheimia grayi	XCH	3
Wasinoha	LXXXVIII	7, 8, 9
Wasuregai	LXXXVI	9
Watase-ami	LXII	17
weinkauffi, Dentalium	LXXXVII	13
watasei, Siriella	LXII	17
xanthogrammicus, Anthopleura	XCH	4
xanthostigma, Tegula	LXVII	10, 11
Xenophora exuta	LXIX	3, 4, 5
Xenophora pallidula	LXIX	6, 7, 8
Yakatagai	LXXXVII	9, 10
Yakwôgai	LXVIII	10
Yamadorigai	LXX	1
Yamato-kairô-dôketu	XC	4
Yamatosizimi	LXXXIII	1, 2
Yasurigiri	LXXXVI	5
Yasuri-hizaragai	XCI	4
Yatude-hitode	LII	1
yessoensis, Pecten	LXXXII	2
Yomegakasa	LXVII	1, 2, 3
Yoroi-isogintyaku	XCH	4
Yosi-ebi	LX	6
Yuikiri	XCIX	4
Zarigani	LXVII	4
Zarugai	LXXXVII	2
Zindô-ika	LXV	6
Zirfaea crispata	XC	5, 6
Zostera marina	XCVI	2
Zuwai-gani	LV	5
Zyudomakura	LXXXIV	4, 5
Zyanome-dakara	LXXXI	7, 8

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リウケン	…	…	…	…	六八	11
リウケウ	タケ	…	…	…	六七	6
リウキウ	マダ	…	…	…	九七	7
スノメガヒ	…	…	…	…	八七	5
オニクサ	…	…	…	…	七四	6
オニクサ	リ	…	…	…	八九	2
オホトリ	ガニ	…	…	…	五二	8
オホナルト	ボラ	…	…	…	七八	5
オホノガヒ	…	…	…	…	八九	8
オホマデ	…	…	…	…	九九	3
オホボラ	ウシ	…	…	…	九一	1
オホエカ	ミガ	…	…	…	九二	7-8
オホゴン	カイ	…	…	…	九六	9-10
オゴツナ	リビ	…	…	…	九五	10-11
オゴキノ	エド	…	…	…	九七	5
オオキ	ジミ	…	…	…	百八	11-12
ワカセア	…	…	…	…	九六	7
ワタメア	ミ	…	…	…	六七	17
ワシノハ	…	…	…	…	七八	7-9
リスレガヒ	…	…	…	…	八六	9
カイニク	サウ	…	…	…	百三	14
カイハグ	コナ	…	…	…	六九	1
カバニナ	シ	…	…	…	七九	16
カバミナ	シ	…	…	…	九五	13
カバデミ	カリ	…	…	…	九八	9
カカタノ	カヒ	…	…	…	八六	6
カカラヲ	エガ	…	…	…	百四	8
カカラマ	ツツ	…	…	…	七四	2
カカラス	ギヤ	…	…	…	七八	4-6
カブトラ	スガ	…	…	…	八一	5
カブトガ	ニ	…	…	…	六二	8
カサボラ	…	…	…	…	七六	1
カサガヒ	…	…	…	…	七二	7-9
ガザミノ	テ	…	…	…	五六	6
カメシ	パン	…	…	…	六五	2
ヨロイイ	ソギン	…	…	…	三七	4
ヨメルカ	サ	…	…	…	六〇	1-3
ヨシエビ	…	…	…	…	七〇	6
タガヤサ	ミニ	…	…	…	七五	5
タガアサ	ニ	…	…	…	五五	7
タガヒ	…	…	…	…	八四	5
タラツナ	ミガ	…	…	…	九一	11
タラバガ	ニ	…	…	…	七〇	6
タラカム	リ	…	…	…	七八	2-3
タウヒラ	ギ	…	…	…	〇〇	6
タマキガ	ヒ	…	…	…	七九	8-9
タケノコ	カガ	…	…	…	七七	9
タコノク	クラ	…	…	…	五三	2
タタコラ	ゲ	…	…	…	五四	6
タテジマ	ウシ	…	…	…	九四	9
タテマジ	ホク	…	…	…	九二	3
タテンベ	イキ	…	…	…	六八	7-9
ソトホリ	ガヒ	…	…	…	九〇	3-4
ツバメガ	ヒ	…	…	…	七九	1-2
ツボシメ	ジカ	…	…	…	九五	6
ツルモ	ツツ	…	…	…	五二	6
ツルアラ	メ	…	…	…	八八	2
ツツガキ	ノ	…	…	…	九八	1
ツノカメ	ノテ	…	…	…	八九	10
ツノガヒ	…	…	…	…	六一	3
ツノナガ	ゴブ	…	…	…	七七	13
ツノマダ	シガ	…	…	…	四五	3
ツキヒガ	ヒ	…	…	…	百二	5-6
ツメタガ	ヒ	…	…	…	八六	8
ネコアシ	コンヅ	…	…	…	九八	4-6
ナリヒラ	シ	…	…	…	八七	7
ナガニシ	ニ	…	…	…	三四	7-8
ナガガ	コン	…	…	…	六九	7
ナナガ	ザム	…	…	…	八七	2
ナナガ	ガヒ	…	…	…	八七	10

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アトミヅエビ	…	…	…	六〇	2
フレスリッゲ	…	…	…	九一	10
ブツノグコ	…	…	…	六二	2
フネリグコ	…	…	…	六三	2
フクロフノリ	…	…	…	五二	2
フジナマコ	…	…	…	五三	2
ブンブクチャガマ	…	…	…	五三	7
コロモガヒ	…	…	…	七四	3
コトヂツノマタ	…	…	…	九八	4
ゴツカイ	…	…	…	六二	8
ゴツカマガヒ	…	…	…	六二	7
コウマイカ	…	…	…	六二	4
コマホウズキガヒ	…	…	…	六二	1
コモノリ	…	…	…	九二	9
コシマガニ	…	…	…	七五	2
コシマンイモ	…	…	…	七五	6
コンブ	…	…	…	七八	9
テナガダコ	…	…	…	六三	3
テナガコブシ	…	…	…	五九	4
テナガエビ	…	…	…	七七	1
デングガヒ	…	…	…	七九	3
デングサ	…	…	…	七九	3
アホリイカ	…	…	…	六八	2
アリソガヒ	…	…	…	八九	12
アヲノリ	…	…	…	九七	3
アカニシ	…	…	…	七三	6
アカホシヤドカリ	…	…	…	七五	2
アカガヒ	…	…	…	七八	10
アカウニ	…	…	…	七五	7
アカクラゲ	…	…	…	九四	4
アカマテガヒ	…	…	…	八六	5
アカフボツボ	…	…	…	六一	5
アカテガニ	…	…	…	五八	1
アカザ	…	…	…	五九	5
アカサンゴ	…	…	…	九三	7
アカヒトデラ	…	…	…	五五	3
アカヒトゲラミ	…	…	…	五六	2
アナアヲサ	…	…	…	六八	4
アラヌメガヒ	…	…	…	七八	6
アラナメ	…	…	…	七八	3-6
アラメ	…	…	…	九八	3-4
アキドリ	…	…	…	九七	8
アクキガヒ	…	…	…	七三	4
アマモ	…	…	…	九九	2
アダギキ	…	…	…	六〇	13
アサリ	…	…	…	八八	6
アサクサノリ	…	…	…	百六	1
アサヒガニ	…	…	…	五四	8
アミクサ	…	…	…	七二	6
アズマニシキ	…	…	…	八九	5-6
アンドンク	…	…	…	九四	3
サイミ	…	…	…	九八	6
ザリガニ	…	…	…	五八	1'-12
サルボウ	…	…	…	七八	2
ザルガヒ	…	…	…	七八	7
ザルエビ	…	…	…	七八	2
ザツマアカガヒ	…	…	…	六七	2
ザツマアサ	…	…	…	八七	1
サナダミズ	…	…	…	七六	3
サラガヒ	…	…	…	五八	1
サラサバテイ	…	…	…	六七	15-16
サクラガヒ	…	…	…	五九	4-5
サクラエビ	…	…	…	八四	4
ササノハ	…	…	…	八八	3-4
サザエ	…	…	…	八八	12
イバダケ	…	…	…	七六	8
キリガヒ	…	…	…	六七	4
キリサイ	…	…	…	七九	7
キキスガサ	…	…	…	六九	3-5
キキヌダア	…	…	…	七〇	1
キキヌフノリ	…	…	…	百	1
キキヨウノリモ	…	…	…	百七	10
キキヨクノハナ	…	…	…	七五	1-3
キキメンガニ	…	…	…	七四	1
キヒトデ	…	…	…	五二	2
キンチヤガヒ	…	…	…	八二	3
キンユ	…	…	…	九	8
ギンアンリウ	…	…	…	九九	7
ユヒキリ	…	…	…	九九	4
メガヒ	…	…	…	六六	2

メダマウミミジシコ...	...	...	六二	7-8
ミドリイソクシヤク...	...	...	九三	3
ミドルク...	...	...	六八	5
ミミシツキイシゴ...	...	...	八八	13
ミミシツキイシゴ...	...	...	七九	10
ミミシツキイシゴ...	...	...	七六	17-18
ミミシツキイシゴ...	...	...	四六	1
ミミシツキイシゴ...	...	...	六六	4
ミミシツキイシゴ...	...	...	六七	11-12
ミミシツキイシゴ...	...	...	七九	7-8
ミミシツキイシゴ...	...	...	九四	5
シロサンゴ...	...	...	九六	5
シロサンゴ...	...	...	六六	4
シロサンゴ...	...	...	六六	5
シロサンゴ...	...	...	六八	9-10
シロサンゴ...	...	...	六九	9-10
シロサンゴ...	...	...	七四	3
シロサンゴ...	...	...	七四	1
シロサンゴ...	...	...	八八	13
シロサンゴ...	...	...	八八	12
シロサンゴ...	...	...	八九	11
シロサンゴ...	...	...	八九	5
シロサンゴ...	...	...	八八	3
シロサンゴ...	...	...	六八	7
シロサンゴ...	...	...	八二	4
シロサンゴ...	...	...	八九	4
シロサンゴ...	...	...	七四	4-5
シロサンゴ...	...	...	八〇	1
シロサンゴ...	...	...	五八	6
シロサンゴ...	...	...	五八	3
エボシガヒ...	...	...	六一	1
エボシガヒ...	...	...	七八	4
エボシガヒ...	...	...	七八	1-2
エボシガヒ...	...	...	八九	4
エボシガヒ...	...	...	百六	11-12
エボシガヒ...	...	...	九六	1
エボシガヒ...	...	...	五五	7
ヒロメ...	...	...	九六	8
ヒロメ...	...	...	七九	10-12
ヒロメ...	...	...	七八	9
ヒロメ...	...	...	八八	1
ヒロメ...	...	...	八九	6
ヒロメ...	...	...	七五	12
ヒロメ...	...	...	八四	1
ヒロメ...	...	...	九二	9
ヒロメ...	...	...	八九	7
ヒロメ...	...	...	九二	3
ヒロメ...	...	...	五五	6
ヒロメ...	...	...	四七	4
ヒロメ...	...	...	七二	2
ヒロメ...	...	...	百六	3
ヒロメ...	...	...	九四	10
ヒロメ...	...	...	九四	1
モクク...	...	...	九五	7
モクク...	...	...	五五	6
モクク...	...	...	五七	3
モクク...	...	...	五九	1
モクク...	...	...	六三	2
モクク...	...	...	五九	6
モクク...	...	...	五九	2
セミエビ...	...	...	五八	2
セミエビ...	...	...	八三	3-4
スイジン...	...	...	七〇	6-7
スイジン...	九六	9
スイジン...	六五	14
スイジン...	六四	2
スイジン...	五五	7
スイジン...	五三	5
スイジン...	八六	3
スイジン...	六九	6
スイジン...	九八	7
スイジン...	百	1

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